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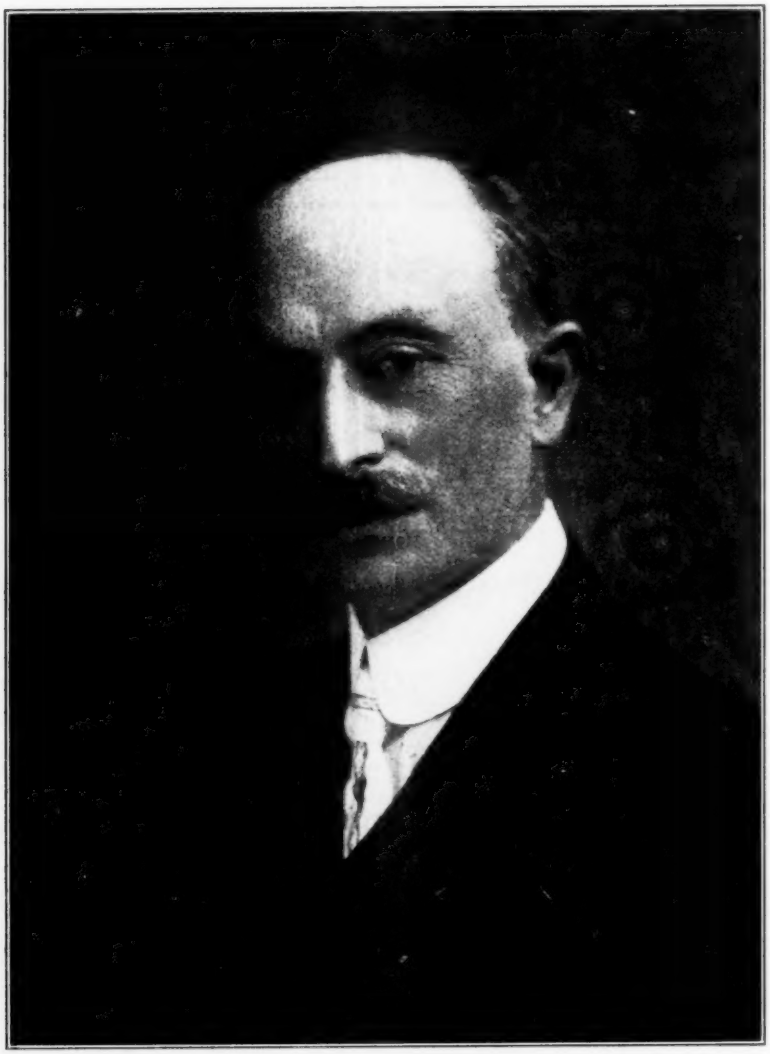

JULIUS A. KOCH

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XI MARCH, 1922 No. 3

JULIUS ARNOLD KOCH.*

The president-elect of the American Pharmaceutical Association was reared in Pittsburgh; here he also received his earlier education and later, in 1884, graduated from the Pittsburgh College of Pharmacy, where he continued his studies in chemistry under Prof. Hugo Blanck. From 1880 to 1891 he was associated with his father in the retail drug business; in the latter year he accepted a professorship in his Alma Mater, and was elected dean of the college. Leave of absence was granted him in 1896 and this and the following year were spent in the Universities of Munich and Heidelberg, where he pursued special work in organic chemistry, at the former under Prof. Adolph von Baeyer, and at the latter under Professors Gatterman and Victor Meyer. Some of his work on aromatic aldehydes is reported in *Berichte*, XXX, 1622, and XXXI, 1149. Shortly after his return Dr. Koch accepted the chair of Organic Chemistry, and became director of the Chemical Laboratories of the Department of Medicine, University of Pittsburgh; in 1903 he was also elected to the same honors and duties in the College of Pharmacy.

Professor Koch was chairman of the Executive Committee of the American Conference of Pharmaceutical Faculties for twelve years; he has been a member of the several revision committees of the Pharmaceutical Syllabus, and was a member of the Revision Committee U. S. P. IX. He served for a year as Reporter on the Progress of Pharmacy (1915–16), and for several years as chairman of the Committee on Unofficial Standards. His efficient service as chairman of the Committee on Finance, in coöperation with the treasurer, has contributed largely in establishing the system that works so smoothly that we perhaps do not fully appreciate the thought, time and judgment of those to whom credit for it is due.

The president-elect was one of the American delegates present at the eleventh International Congress of Pharmacy at The Hague. He is a regular attendant at the meetings of the A. Ph. A. and of the American Conference of Pharmaceutical Faculties and, usually, one or both of his daughters accompany him to the conventions.

He spends the summer months on his farm, not very far away from Pittsburgh, where the professor becomes countryman and joins in the work as well as the recreation that country life affords. Dr. Koch's wife passed on quite a number of years ago, and also the father, but the mother shares the home happiness of devoted children and grandchildren.

* A sketch by J. H. Wurdack has been drawn upon for these data.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

THE CONFERENCE IDEA.

WE must think straight these days in matters that concern us and our profession and work together for the attainment of desirable objects; progress is only possible when there is honest and fair coöperation. Consideration of others while thinking of ourselves is the basis of service. Discussion and agreement bring better results, at least more effectual and permanent results than can be obtained by more forcible means; one develops understandings and sympathies, the other creates misunderstandings and contentions. The fiercest individual is not independent, as he pretends and asserts. We must in some way relate ourselves to what goes on around us, and join with others in our tasks and duties.

There are many matters in which the preceding statements are applicable today—in affairs of Congress, in business and in professional life. That the conference idea is the thing has recently been demonstrated; it matters not how much or how little was accomplished, it is a fact that it brought the nations into a better understanding, if not into a closer relationship. So it should be with business and the Government and the people; big business should not be considered unlawful or be hampered just because it is big, nor little business subjected to measures which will interfere with its development, just because it is little; laws relating to business should be for its encouragement—to help legitimate business and punish criminals.

The confidence of the public is vitiated when the aim of one trade or profession is to destroy the other, provided it has the right to exist, or belittle its worthy activities; both are injured by such action. Coöperation to bring about higher standards of professional and business life indicates a desire and determination to progress, to extend and improve the service rendered by its votaries.

The conference idea is being more generally adopted; the professions that have in the past held themselves aloof are gaining a broader vision and realizing they can do more effective work; are establishing themselves more firmly in the esteem of the people, and helping their own profession through mutual interest by coöperation with those who have a part in the work in which they are engaged. Some still hold tenaciously to the belief that force will insure the results they are after; this may be true in certain cases and under certain conditions, but not with the thinking classes of this day—a consistent policy of coöperation is more effective and certainly productive of more satisfactory and more permanent results.

E. G. E.

OPPORTUNITIES OF THE LABORATORY.

IN an article of above title, in the *American Druggist*, Dr. Henry Kraemer deals with the subject most interestingly and instructively. He states that no one can conduct a laboratory unless he has the research spirit and a desire to be of service. "In the past," he says, "there were a few isolated examples of the power of penetration; to-day we have a great world of science, and there are many master minds, each doing his share to break down customs and traditions." In defining the laboratory spirit the author of the paper states:

> "The laboratory mind is typical of the men of practical achievements. Up to within fifty years it has been considered to be the peculiar property of men of genius. Now we know that it can be developed by contact with men and teachers who are capable of accurate thinking, honest statement of fact and observation, and sane interpretations.
>
> "* * * * From the time I was a student in pharmacy I have witnessed hundreds of earnest students carrying on their thesis work in the store and delving into the secrets of pharmacy and medicine. There is no pharmacist who does not have this spirit or he would not have selected pharmacy as his calling."

He brings out three essentials in the making of a laboratory man. "The first thing is the possession of a good pair of eyes. Then he must be intellectually honest. It goes without saying that he needs moral strength."

Editor Ivor Griffith, in an editorial of the February *American Journal of Pharmacy*, discusses the subject, at the conclusion of which he names such laboratory men as Hawk, Dakin, Benedict and the greatest among the laboratory workers, M. Louis Pasteur, whose divining mind (we are quoting Dr. Kraemer) "enabled him to deal the final blow at fallacy of spontaneous generation, and brought to light a world of organisms upon a complete understanding of which the future of the human race depends." Editor Griffith makes use of the following quotation:

"Heaven trained a pure scientist, who had never handled a scalpel nor written a prescription, took this non-medical man of science and set him to be the head of all the heads of the medical profession, to have them all obedient to his teachings and proud of the very sound of his beloved name."

The opportunities for laboratory work were well presented at the February Chicago Branch A. Ph. A. meeting, when pictures were shown of various pharmacies and laboratories in different sections of the country. G. Boyd Law, of Savanna, Ill., gave a practical demonstration of a blood examination; Prof. Willis K. Weaver, of methods for determination of creatinine, urea, etc., in the blood. While E. von Hermann, who owns one of the largest drug stores of the country, contended that a laboratory in the pharmacy is not advisable, Mr. Testin, of Joliet, Ill., speaking from experience, presented the advisability and the possibility of success in such a venture, and Prof. Frank J. Zuck spoke of the success of pharmacist Fred Skeyhan of Rockford, Ill., who has a well-equipped laboratory in connection with his pharmacy. The comment, therefore, is for the purpose of pointing out the opportunities of the laboratory. Pharmacy and medicine should and must work together to give best service; the opportunities are not only in the laboratories of the physician, the pharmacist, and the pharmaceutical and chemical manufacturers, but coöperatively through the laboratories of the schools and the hospitals.

He who enters the field must be imbued with the spirit of the laboratory. Quoting the eminent research worker, J. U. Lloyd, "He who engages in research should be so bold as to question orthodox theoretical rules and formulas, and in the face of authority create images and plans of procedure of his own. If concerned in the exactions of science, he should expect resistance from those whose idols he touches with even the kindliest interest." E. G. E..

PUBLICITY AS GUARANTEE OF GOOD FAITH.

MUCH publicity has been given to correspondence between Secretary of Commerce Hoover and Attorney General Daugherty and published in many daily papers. The correspondence deals with what trade associations may or may not do. An editorial in the *New York Commercial* of February 17 considers the matter in a way that will prove of interest to the members who are affiliated with trade associations, and therefore the liberty is taken to reprint the larger part of the editorial.

"Most trade associations have limited the dissemination of statistical data and other trade information to their own members, while those giving it immediate publicity are in the minority. Such restriction of information naturally places non-members at a disadvantage and the policy of our laws is to give everyone engaged in business an equal chance. It may seem to some an extreme view that no one may, by his greater effort or expenditure of additional capital, secure an advantage over his less progressive rival. He who refuses to bear any share of the expense of collecting information because he knows he can get the information anyway should not, as a matter of simple justice, be the recipient of the Government's solicitude. In this respect our policy is one that puts a premium on narrowness and selfishness. On the other hand, men who have become trade leaders are usually men of broad vision and are therefore qualified to make better use of trade information than these narrower ones. What they may lose to these smaller rivals will be but trifling in comparison with what they will gain for themselves by a more intelligent ordering of trade practice. In other words, it will help them more than it will hurt them. * * * *

"The underlying thought in the discussion seems to be that associations that make honorable use of their information should be permitted to operate, although there is danger of violating the spirit of our laws in one or two practices that have been mentioned. Uniform cost accounting, for example, is likely to be a long step toward eliminating competition, and while the Attorney General was correct in his argument in regard to coöperative advertising as having the tendency to give the impression of uniform quality where such is not the case, later correspondence revealed that the proposition had not been correctly stated by Mr. Hoover, who eliminated that part of his question which tended to give a wrong impression.

"The Attorney General naturally had to be conservative in stating his position because of cases that might later have to be prosecuted, and also because of pending cases. Hence, he was obliged to qualify his statements as being only tentative, so that if in actual practice it should develop that competition is suppressed or prices materially enhanced, the cases would have to be treated on their merits.

"The Department of Commerce can make excellent use of these trade organizations when properly conducted, and both Secretary Hoover and Attorney General Daugherty have performed excellent public service in trying to clear up the situation. It is another indication of the present Administration's desire to maintain a constructive attitude toward business."

METHODS OF COÖPERATION AMONG MUNICIPAL, STATE AND FEDERAL OFFICIALS ON PHARMACEUTICAL PREPARATIONS.*

BY W. S. HUBBARD, PH.D.[1]

There is to my mind no more fertile field for intensive work in the interest of health than the enactment and enforcement of state and municipal laws intended to control the purity of drug products. Many states have passed laws similar to the Federal Food and Drugs Act, and some cities have ordinances and organizations controlling the quality and purity of drugs. Many of these measures have been beneficial. However, some states and cities have no laws and many of the state and municipal governments having authority are not able to enforce their drug laws in as efficient a manner as they undoubtedly desire. The chief cause is, perhaps, a lack of knowledge of this class of products and the lack of properly trained chemists to determine the quality and strength of drug preparations. As strange as it may seem, many men trained in the enforcement of food laws and in the analysis of food products seem to think it is beyond their ability to understand the assumed mysteries of drug composition. Herein is found one of the main reasons, in my judgment, why existing state and city drug laws are not more intensively enforced. Many state analysts have not felt themselves qualified to examine drug preparations and their executive officers have shared this viewpoint. It may be assumed that executive officers entrusted with the enforcement of state and municipal drug laws have thought it essential to have specially trained analysts for drug work, and because of lack of funds and scarcity of pharmaceutical chemists, they have in many cases made inadequate use of the drug laws on the statute books. While very desirable, it is not necessary to have specially trained men for this work. In so far as the analysis of straight pharmaceuticals is concerned, any food analyst can soon become proficient in the methods of analysis as given in the United States Pharmacopoeia and National Formulary. The methods and standards as set forth in these authoritative works are easy of accomplishment and interpretation.

Every proprietary and patent medicine, however, presents an individual problem, but not an insurmountable difficulty by any means. There are no standards or methods of examination for this class of preparations. In view of these facts, the analyst whose experience has been entirely or largely with food products will require training for a short period in the essentials of work on such articles. The Bureau of Chemistry of the United States Department of Agriculture will co-

[EDITOR'S NOTE.—The article by our fellow-member, Dr. W. S. Hubbard, is reprinted because it contains some suggestions for drug officials relative to which pharmacists and pharmaceutical organizations should be consulted. Unfortunately there is not invariably strict observance of the ethics of advertising among advertisers and agencies. The article on "Pharmaceutical Ethics" by Charles H. LaWall (November and December issues 1921, JOUR. A. PH. A.) contains much information along the lines discussed in the paper here presented. The review on the subject of "Pharmaceutical Ethics" has been reprinted, and drug officials and advertisers may obtain copies by addressing the author, 636 South Franklin Square, Philadelphia, Pa.]

* Read before the Food and Drugs Section, Fiftieth Annual Meeting, American Public Health Association, New York City, November 18, 1921. Approved for publication by the Secretary of Agriculture. Reprinted from the December 1921 issue of the *American Journal of Public Health*.

[1] Associate Chemist, New York Laboratory, U. S. Bureau of Chemistry.

operate with all state and municipal authorities in lending assistance in such analysis. The Bureau has laboratories in fourteen different cities of the United States, some laboratory being accessible in any part of the country. It is therefore possible for state and municipal officials to obtain aid from the Bureau of Chemistry laboratory situated nearest to them. When inquiry is made concerning specific products, it is necessary that the Bureau be furnished with a copy of the label and all accompanying literature, together with any other facts at hand as to how the product is sold and used. It may then be possible for the Bureau to suggest what particular ingredients to look for and, if necessary, the methods of analysis to use when such methods are known, as well as the amount of sample necessary for analysis.

Another means by which the Bureau of Chemistry can coöperate with state and city drug officials is by the detailing of a state or city analyst to one of the government laboratories for a period of intensive training, and where it is possible to do so the latter procedure is highly desirable. It seems to me that the greatest coöperation the Bureau of Chemistry can give to states and municipalities in their drug work is this training of analysts.

The Bureau of Chemistry has done considerable work under what is called the Sherley Amendment to the Food and Drugs Act, which is the amendment which prohibits false and fraudulent claims on all labels of patent medicines. It is this type of product that I have been considering as more or less difficult of analysis and interpretation. It is to control this class of preparations that most states need better laws and assistance in more efficient enforcement.

The Sherley Amendment of the Federal Food and Drugs Act has been extensively applied to certain classes of patent medicines. The labels on most of the venereal disease remedies and abortifacients—ordinarily called female pills—which enter into interstate commerce have been completely revised, with the elimination of practically all therapeutic claims. It is perhaps needless for me to remind you that female pills are almost always used in connection with immorality. However, there are still some of these goods on the market, and the federal government is not able to deal with them for the business is done interstate. The venereal remedies and female pills are among the most vicious things on the market, but the Bureau of Chemistry will have considerable difficulty in completely cleaning them out unless the state and city authorities join with us energetically in a coöperative way to bring about the desired results. We must have your coöperation. And to my mind, the most effective law, not only for these two classes of preparations, but for all so-called patent medicines, is a law which will cover advertising. The federal government needs an advertising law too, but it would be just as effective and perhaps more effective if each state and city had such a law. I am talking now of a law covering all false and fraudulent claims in advertising medicinal preparations.[1] The label of itself may be unobjectionable, but the advertising gives to the wording on the label an entirely new and often quite a false meaning. Many of the venereal remedies are still advertised broadcast as a cure for gonorrhea, although the label may state only the name of the preparation and nothing more. This also holds

[1] There are 23 states having the *Printers' Ink* model statute and 13 other states with an amended statute which covers all false statements in advertising.

good for many patent medicines which are advertised as cures for consumption, diphtheria and all the rest of the diseases known by man and some yet to be discovered.

I shall now refer briefly to pharmaceutical preparations which are used by physicians for administration to their patients—preparations which go to make up their prescriptions or that they may give direct to the patient. This certainly is a very fertile field for state and city control. State and city control is essential also to supplement the federal law, for in some cases the federal authorities are unable to take action where a doubt exists because of the fact that we cannot secure evidence of interstate shipment, or because we find products removed from their original packages—circumstances which, however, do not prevent state or municipal action.

Physicians in every state, through the medical associations, should demand protection from the unscrupulous manufacturer and unscrupulous dispenser, and work for laws and enforcement of laws which will afford that protection. The great trouble is, however, that the physician is apt to rely on the brand or manufacturer's name that appears on the label. It is well known by some of us that there are preparations made by reputable manufacturers that are not what you might expect from the labels. Take a very simple thing like fluidextract of cascara. The Canadian Government has shown that there are practically no two extracts thus named which are alike, and this applies also to those made in the United States. Again, in the case of another example—paregoric—I know of my own personal knowledge, outside of any connection with the Government, of a large firm that has in the past made paregoric from morphine sulphate colored with caramel. I do not believe the physician who prescribes paregoric is desirous of giving his patient colored morphine sulphate. Take pills and tablets: the physician certainly prescribes these with a definite idea in mind, and that is to get a certain result from a given amount of certain ingredients. Yet, unfortunately, it frequently happens that some ingredient is missing entirely or is very deficient, or perhaps two or three times the amount supposed to be present is found. This, of course, is a menace to health in the case of such potent drugs as heroin, cocaine, morphine, etc.

Many manufacturers make a pretense of having analytical control of their products. Do not be misled by a fine chemical laboratory into believing that all products are as carefully analyzed as the fixtures might indicate. Find out the qualifications of the chemists employed, and then review the analytical cards of a number of different preparations and ascertain whether the laboratory is for the protection of the people or for the pocketbook of the manufacturer only. Very frequently you will find it for the protection of the pocketbook of the manufacturer and the dividends of the stockholders. There are many good and reliable coöperative physicians' supply houses, and pharmaceutical manufacturers, but regrettably some such houses have come into existence as a result of the activities of promoters conceived in a Wallingford's mind and born to line with gold the pockets of a Ponzi. It is unfortunate that some physicians buy stock in such pharmaceutical establishments or physicians' supply houses. It makes a physician a party to the scheme and he is inclined to buy the products of this profit-sharing concern to the exclusion

of all others. Since price and profit are the two uppermost thoughts in the minds of these particular manufacturers, they are, of course, reluctant to hire chemists to control their raw ingredients or the finished products.

The matter of factory sanitation to include sterility of products should be covered by law and by enforcement. To my mind this is of great importance. Tomato products are considered unfit for food when they contain more than 100,000,000 bacteria per cubic centimeter, and milk when it contains a much smaller number, to mention only two products; yet I have seen drug preparations on the market containing ten times that many bacteria, which preparations were to be administered to the sick, a class who have a well-recognized low resistance to bacteria of all kinds.

And let me emphasize again that more effective control of drug products by the state and city governments is urgently needed. The city and state should take up this question more actively than has been done in the past; they should pass laws that will cover patent medicines and crude drugs as well as pharmaceuticals.

In conclusion, therefore, it is desirable for state and municipal drug officials to enlarge their field of activity and not limit their efforts to a consideration of comparatively simple products, such as tincture of iodine and spirits of camphor, but to join with us, who are operating under the federal law, in our efforts to ever widen the circle of effective drug control. The Bureau of Chemistry regards it not only as a duty but as a pleasure to lend assistance by suggesting specific lines of work to be undertaken or by giving intensive training in so far as our funds will permit to such investigators as may be assigned to this most important regulatory undertaking.

DOMESTIC AND IMPORTED VERATRUM (HELLEBORE), *VERATRUM VIRIDE* AIT., *VERATRUM CALIFORNICUM* DURAND, AND *VERATRUM ALBUM* L. II. CHEMICAL STUDIES.*

BY ARNO VIEHOEVER AND JOSEPH F. CLEVENGER.

Chemical Studies.

The work on the different species of Veratrum, reported in Part I,† has been continued. The first paper dealt with the botanical characteristics and the microchemical tests useful in the differentiation of the species. The object of the present studies was to ascertain the amount of alkaloids occurring in two commercial forms, *Veratrum album* L. and *Veratrum viride* Ait., and the amount of total and acid-insoluble ash present. Some preliminary consideration has been given to the isolation of the active principles and to pharmacological data reported in literature.

CHARACTER OF ALKALOIDS.

The character of the alkaloids of *Veratrum album* and *Veratrum viride* has received much attention in the past, but apparently no chemical work has been

* A brief discussion of literature on comparative pharmacological work is included.

† A. Viehoever, L. Keenan, and J. F. Clevenger, "Domestic and Imported Veratrum (Hellebore), *Veratrum viride* Ait., *Veratrum californicum* Durand, and *Veratrum album* L. I. Botanical Studies," JOUR. A. PH. A., 10, 581–593 (1921).

done on *Veratrum californicum* Durand. A tabulation of the results reported by various investigators with respect to the alkaloids present in *Veratrum album* and *Veratrum viride* is given in Table I.

TABLE I.

NATURE OF ALKALOIDS IN *Veratrum album* L. AND *Veratrum viride* AIT.

Veratrum album L.	*Veratrum viride* Ait.
Pelletier and Caventou[13] (1820) isolated a substance considered to be veratrine.	Worthington[33] (1838) isolated an alkaloid considered identical with veratrine.
Simon[23] (1837) found veratrine and jervine.	Richardson[16] (1857), Scattergood[21] (1862) found veratrine and probably jervine; Percy[14] (1864) confirmed the presence of veratrine.
Will[30] (1840) reported jervine, veratrine and sabadilline.	Bullock[2] (1865) isolated two alkaloids; Wood[31] called them provisionally viridia and veratroidia; Bullock denied the presence of veratrine.
Weigand[28] (1842) confirmed the presence of veratrine.	Maisch[9] (1869) suggested alkaloids identical with those of *V. album*.
Maisch[9] (1869) suggested alkaloids identical with those of *V. viride;* reported absence of veratrine.	Peugnet[15] (1872) and Mitchell[10] (1874) proved the identity of viridine with jervine.
Peugnet[15] (1872) and Mitchell[10] (1874) demonstrated the identity of jervine with viridine found in *V. viride*. Peugnet found an alkaloid, veratroidine, identical with that of *V. viride*.	Peugnet[15] (1872) found veratroidine to be different from veratrine.
Weppen[29] (1873) confirmed the presence of veratrine and jervine.	Mitchell[10] (1874) reported jervine and veratroidine.
Mitchell[10] (1874) isolated jervine; also veratralbine, an alkaloid.	Wormley[32] (1876) reported jervine and veratrine.
Wormley[32] (1876) reported veratrine and jervine.	Bullock[13] (1876) reported veratroidine as a mixture of jervine[4] and resin.
Tobien[24] (1877) found jervine and veratroidine, the latter discovered by Bullock[2] (1865) in *V. viride*.	Robbins[17] (1877) reported the presence of jervine and veratridine, and the absence of veratrine.
Wright and Luff[34] (1879) considered the veratralbine of Mitchell as possibly a mixture of alkaloids.	Wright and Luff[34] (1879) considered veratroidine as a possible mixture of more than one base.
Wright and Luff[34] (1879) found jervine, rubijervine, pseudojervine, veratralbine, very small amounts of veratrine, and apparently no cevadine.	Wright[35] (1879) found jervine, rubijervine, very little pseudojervine, cevadine, and traces of veratrine and veratralbine.
Salzberger [20] (1890) found jervine, rubijervine, pseudojervine, protoveratrine, protoveratridine.	
Bredemann[1] (1906) isolated jervine, rubijervine, pseudojervine, protoveratrine.	

It appears that the character of the alkaloids of *Veratrum viride* is closely analogous to that of the alkaloids of *Veratrum album*. The information on the chemistry of *Veratrum album* seems to be more specific than that pertaining to *Veratrum viride*. Salzberger,[20] who worked with large amounts of *Veratrum album*, up to 300 kilos of material, isolated at least four, possibly five or more alkaloids, these results having been recently verified by Bredemann.[1] No recent work on *Veratrum viride* is at hand. The latest information available is that of Wright,[34] who, together with Luff, in making a comparative study of *Veratrum viride* and *V. album*, found certain alkaloids present in both species, the main difference being that cevadine, the predominating alkaloid in *Veratrum viride*, was apparently absent in *V. album*, and that veratralbine, predominant in *Veratrum album*, was present only in traces in *V. viride*. As Wright used less than 42 pounds of *Veratrum*

iride, further work with larger amounts appears desirable to verify previous findings and especially to confirm the presence of cevadine.

AMOUNT OF ALKALOIDS.

Wright reported that *Veratrum viride* contained only one-fifth (0.08%) of the amount of alkaloids found by himself and Luff in *Veratrum album* (0.4%). Bullock,[2] however, states that the amount of alkaloids present in *Veratrum viride* is decidedly larger, and that the low results obtained by Wright were due to the precipitation of alkaloids with resin. Data in the literature illustrate the variation in the amount of alkaloids in both *V. album* and *V. viride*.

TABLE II.

AMOUNT OF ALKALOID REPORTED IN *Veratrum album* AND *Veratrum viride* AIT.

Substance.	Alkaloid (%).	Author.	Year of Analysis.	Remarks.
	Veratrum album			
V. album	0.42	Wright and Luff[34]	1879	Referred to as roots in text.
V. album	1.3–1.54	Kremel[7]	1889	
V. album	0.57	Pehkschen[12]	1890	Plants growing wild. Referred to as powdered rhizome in text.
V. album	0.29	Pehkschen[12]	1890	Cultivated. Referred to as powdered rhizome in text.
V. album	0.66	Pehkschen[12]	1890	Commercial sample. Referred to as powdered rhizome in text.
V. album	1.12–1.25	LaWall[8]	1897	5 powdered commercial samples.
V. album	1.75	LaWall[8]	1897	Origin not stated.
V. album	0.56–1.01	Bredemann[1]	1906	3 commercial samples.
	Veratrum viride			
V. viride	0.08	Wright[35]	1879	Referred to as roots in text.
V. viride	0.6612	Bullock[2]	1879	
V. viride	0.08	Pehkschen[12]	1890	Commercial sample. Referred to as powdered rhizome in text.
V. viride	0.8015	Bredemann[1]	1906	Commercial sample.
V. viride	0.14–0.712	Bredemann[1]	1906	9 powdered commercial samples.
V. viride	1.21	Roberts[18]	1915	
V. viride	1.32	Vanderkleed[25]	1915	
V. viride	0.9, 1.04, 1.41	Patch[11]	1916	Referred to as powdered (1 lot).

The variation observed may be due, as Bredemann[1] suggests, to the fact that the drugs were collected at different seasons. It may be due also, as we have found in the case of hydrastis,[26] to the fact that the proportion of roots present, which contain different amounts of alkaloid, varies greatly. Furthermore, the disagreement of results may also be due to failure to determine the botanical identity and purity of the Veratrum species examined. It must finally be kept in mind that different authors have used different methods of assay.

After studying the methods proposed for the estimation of alkaloids in Veratrum, we adopted essentially the one suggested by Bredemann,[1] shortening materially, however, the time of contact of the solvent with the drug. The time used by Bredemann for the extraction (3 hours) seemed unnecessarily long.* Some authors used NH_4OH, others NaOH to liberate the alkaloid from the drug or acid solutions. To ascertain the influence of time of extraction and the use of different alkalies upon yield, a few experiments were made. The details and results of these experiments are given in Table III.

TABLE III.

EFFECT UPON YIELD OF VARIATION OF TIME OF EXTRACTION AND USE OF DIFFERENT ALKALOIDS.[a]

Species.	Part Used.	Time of Extraction.	Alkali Used.	Total Alkaloids.	Analyst.
V. album	Rhizome and roots	30 min.	NaOH	1.53	J. F. Clevenger
V. album	Rhizome and roots	30 min.	NH_4OH	1.50	J. F. Clevenger
V. album	Rhizome and roots	1 hour	NaOH	1.44	J. F. Clevenger
V. album	Rhizome and roots	3 hours	NaOH	1.52	J. F. Clevenger
V. album	Rhizome and roots	3 hours	NH_4OH	1.47	J. F. Clevenger

[a] Analysis made upon the same commercial sample.

From these data, even a 30-minute extraction appears sufficient. The same results were obtained whether NaOH or NH_4OH was used.

The details of the procedure are as follows:

Method for the Estimation of Veratrum Alkaloids.—A 15-gram sample (No. 40 powder**) was placed in a 250-cc flask; 150 cc of chloroform-ether (equal parts) was added and allowed to act upon the sample for 10 minutes. Then 10 cc of 10% ammonia was added to the flask. The mixture was shaken at frequent intervals during the entire time of extraction. At the end of 60 minutes 10 cc of water was added. After a thorough shaking the crude material was allowed to settle and the liquid was decanted through a pledget of cotton into a flask containing about $^1/_4$ Gm. of calcined magnesia. After shaking, the mixture was filtered into a 100-cc graduated cylinder, and 80 cc of the filtrate (considered equivalent to 8 Gm. of drug) was transferred to a separatory funnel. During the entire operation, of course, care was taken to avoid any loss of the liquid by evaporation. The filtrate in the separatory funnel was then shaken out with 20-20-10-10 cc of 10% acetic acid.†

* The U. S. Pharmacopoeial directions for the extraction of different alkaloidal drugs require 1–3 hours' extraction, with frequent shaking, and subsequent standing up to 10 hours. The fineness of the different powders extracted varies from No. 40 to No. 80. The entire time of contact of the crude alkaloidal drugs with the solvents, during shaking and subsequent standing, probably can be materially shortened, especially when a powder of a high degree of fineness is used. Further experimental work, of course, is necessary to establish this presumption as a definite fact.

** A few exceptions are noted in Table IV.

† An additional shake-out should show complete extraction when tested with Mayer's reagent. Acetic acid is used, inasmuch as the acetate of jervine, occurring in predominating amounts, is more soluble in water than the salts of mineral acids.

These "shake-outs" were collected in a separatory funnel, made alkaline with 10 percent ammonia, and in turn shaken out with 20-20-10-10 cc of chloroform-ether. The "shake-outs" were collected in a tared beaker, evaporated by passing a slow current of air over the liquid, and dried to practically constant weight at 100° C. (weights made at 30-minute intervals).

This method was used in a survey covering the examination of samples of domestic and imported Veratrum, mainly collected in import or interstate trade. A few authentic specimens were also included in the work. In addition to the estimation of the alkaloids, the condition of the samples as to proportion of rhizomes and roots present, as to purity (total and acid-insoluble ash), and as to fineness of powder was determined. The data are given in Table IV.

CONDITION OF SAMPLES.

The relative amounts of roots and rhizomes present vary decidedly. Sometimes the roots are prevalent, sometimes the rhizomes. The rejections consisted mainly of adhering soil. The fineness of the powder was determined, using a set of sieves in order to ascertain the degree of uniformity in size of the particles of the various samples. There is no uniformity, even in those cases where the samples had evidently been put through the same milling process. As a result of this examination it appears advisable, if not necessary, always to verify the size of the powder, should a definite size of powder be required in an assay.

Discussion.

ALKALOIDAL CONTENT.

From a critical review of the literature and the data given in Tables II and IV, it appears that no differentiation of the species *V. album* and *V. viride* can be based on the alkaloidal content. It is evident that *Veratrum viride* contains as much alkaloid as *Veratrum album*. Of interest is the difference in alkaloidal content found in the roots and rhizomes of other drugs, *e. g.*, hydrastis, the roots of which usually contain a smaller amount than the rhizomes. From the amounts of alkaloid found it appears that the minimum limit of tolerance of 0.45 percent and 0.60 percent alkaloid, as suggested by Gordon,[6] is too low. We are inclined to believe that a limit of 1 percent, as suggested by LaWall[8] and adopted by the Swiss Pharmacopoeia for *Veratrum album*, should prove to be a satisfactory pharmacopoeial alkaloid standard for both *Veratrum album* and *Veratrum viride*.

ASH CONTENT.

The amount of total and acid-insoluble ash varies greatly, the following range being evident from the results in Table IV: Total ash, from 2.9 to 19.0%; acid-insoluble ash from 0.5 to 15.2%.

Interesting also in this connection are the data which indicate clearly the cause for the high total and acid-insoluble ash; namely, the excessive amounts of dirt. Where this dirt (rejections) had been removed from the drug the amounts of total ash and acid-insoluble ash were very low. In our former work on American crude drugs,[5] on hydrastis,[26] and on aletris,[22, 27] we reached the same conclusion.

A limit of 8 percent total ash and 4 percent acid-insoluble ash appears to be a feasible pharmacopoeial standard and will indeed be a liberal limit for adequately cleaned, washed samples of the crude medicinal drug.

MICROSUBLIMATION.

Rosenthaler,[19] who reports sublimation experiments with *Veratrum album*,

TABLE IV.

EXAMINATION OF DOMESTIC AND IMPORTED VERATRUM.

No.	Identity.	Part.*	Alkaloid, Percent.	Alkaloid, Detd. %	Alkaloid, Computed. %	Ash. Determined. Total. %	Ash. Determined. Insol. %	Ash. Computed. Total. %	Ash. Computed. Insol. %	Fineness of Powder. Portion Separated in Set of Sieves. Below No. 40. %	No. 40. %	No. 60. %	No. 80. %	Origin of Sample.
						Veratrum album.								
3131	*V. album*	Roots	39.0	1.42	2.04	3.5	0.6	2.9	0.5	45.0	23.0	15.0	17.0	Coml. Imp.
	V. album	Rhiz.	61.0	2.45		2.5	0.5			15.5	32.0	16.0	36.5	
3160	*V. album*	Roots	38.0	1.05	1.19	6.6	3.2	4.4	1.9	..	13.0	31.0	56.0	Coml.
	V. album	Rhiz.	60.0	1.28		3.2	1.0			..	16.0	35.0	46.0	Coml.
		Rej.	2.0											
3164	*V. album*	Roots	33.0	0.98	1.07	6.2	3.1	4.5	1.8	..	13.0	33.0	54.0	Coml.
	V. album	Rhiz.	65.0	1.12		3.6	1.2			..	15.0	41.0	44.0	Imp.
		Rej.	2.0											
3165	*V. album*	Rt. *e* Rh.	..	2.11	..	5.3	1.9	..	..	..	0.5	24.5	75.0	Coml. Imp.
3130	*V. album*	Rt. *e* Rh.	..	2.15	..	4.8	2.0	..	..	..	4.0	13.0	83.0	Coml. Imp.
3124	*V. album*	Rt. *e* Rh.	..	1.11	..	8.4	5.0	..	..	..	2.0	4.0	94.0	Coml. Imp.
3073	*V. album*	Rt. *e* Rh.	..	1.29	..	10.5	5.4	..	..	..	2.5	31.0	66.5	
3159	*V. album*	Rt. *e* Rh.	..	1.09	..	10.3	6.1	..	..	7.0	27.0	47.0	19.0	Coml.
3134	*V. album*	Rt. *e* Rh.	..	1.00	..	10.8	7.0	..	..	..	5.0	30.0	65.0	Coml. Imp.
3136	*V. album*	Rt. *e* Rh.	..	1.32	..	10.7	7.0	..	..	..	8.5	15.5	76.0	Coml. Imp.
3128	*V. album*	Rt. *e* Rh.	..	1.11	..	12.0	8.0	..	..	..	2.0	4.0	94.0	Coml. Imp.
3123	*V. album*	Rt. *e* Rh.	..	1.08	..	12.4	8.5	..	..	..	5.0	5.5	89.5	Coml. Imp.
3129	*V. album*	Rt. *e* Rh.	..	1.20	..	13.3	8.9	..	..	1.0	38.5	34.5	26.0	Coml. Imp.
3167	*V. album*	Rt. *e* Rh.	..	1.09	..	19.0	15.0	..	..	..	6.0	7.0	87.0	Coml. Imp.
						Veratrum viride.								
3141	*V. viride*	Rt. *e* Rh.	..	1.30	..	4.8	1.2	..	..	2.5	10.0	15.0	72.5	Coml. Dom.
3132	*V. viride*	Roots	66.0	1.33	1.28	6.2	1.8	5.2	1.4	4.0	12.0	30.0	54.0	New York[2]
	V. viride	Rhiz.	28.0	1.18		2.9	0.6			..	13.0	37.0	50.0	New York[2]
		Rej.	6.0											
3117	*V. viride*	Roots	42.0	0.95	1.03	5.0	2.5	4.9	2.0	..	13.5	23.0	63.5	N. Carolina[3]
	V. viride	Rhiz.	48.0	1.11		4.8	1.5			..	40.0	33.0	27.0	N. Carolina[3]
		Rej.	10.0											
3106	*V. viride*	Roots	52.0	1.34	1.53	9.1	2.4	7.8	2.1	2.0	15.5	36.0	46.5	Coml. Dom.
	V. viride	Rhiz.	43.0	1.76		6.2	1.9			..	22.0	39.0	39.0	
		Rej.	5.0											
3163	*V. viride*	Roots	55.0	1.58	1.61	9.2	3.7	6.7	2.3	11.0	38.0	18.5	32.5	Coml. Dom.
	V. viride	Rhiz.	42.0	1.76		3.5	0.5			11.0	30.0	22.0	37.0	Coml. Dom.
		Rej.	3.0											
3121	*V. viride*	Rt. *e* Rh.	..	1.17	..	5.5	2.7	..	..	1.0	10.0	24.0	65.0	Coml. Dom.
3122	*V. viride*	Roots	45.0	1.07	1.27	8.5	5.1	5.9	3.0	6.0	6.0	24.0	62.0	Coml. Dom.
		Rhiz.	53.0	1.45		3.7	1.3			..	14.0	33.5	52.5	Coml. Dom.
		Rej.	2.0											
3113	*V. viride*	Roots	42.0	1.22	1.39	9.5	5.0	6.8	3.2	1.0	16.0	30.0	53.0	W. Virginia[4]
	V. viride	Rhiz.	52.0	1.70		4.7	1.7			..	11.5	35.0	53.5	W. Virginia[4]
		Rej.	6.0											
3140	*V. viride*	Rt. *e* Rh.	..	1.22	..	6.1	3.6	..	..	..	9.0	28.0	63.0	Coml. Dom.
3135	*V. viride*	Rt. *e* Rh.	..	1.11	..	13.0	9.0	..	..	..	20.0	11.0	69.0	Coml. Dom.
3139	*V. viride*	Rt. *e* Rh.	..	1.04	..	16.5	12.7	..	..	..	19.0	1.0	80.0	Coml. Dom.
3166	*V. viride*	Rt. *e* Rh.	..	1.15	..	19.0	15.2	..	..	trace	4.0	20.0	76.0	Coml. Dom.

*Abbreviations—Roots and Rhizomes: Rt. *e* Rh. Rejections: Rej.
[1] Abbreviations—Commercial: Coml. Imported: Imp. Domestic: Dom.
[2] Collected in low lands, not swampy, at Machias, N. Y.
[3] Slightly moist plateau, North Carolina.
[4] Collected on dry mountain, West Virginia.

obtained a sublimate which gave the typical color reactions** with sulphuric acid as well as precipitates with alkaloidal reagents. Extending these experiments to

**See the authors' previous paper, Part I, JOUR. A. PH. A., 10, 590, 1921.

viride and *californicum*, the authors have obtained amorphous and sometimes crystalline sublimates. Upon dissolving the amorphous sublimate in organic solvents, such as alcohol, crystallization was induced, most of the crystals observed being needle-shaped and featherlike. Both green and red color reactions were observed, suggesting the presence of such alkaloids as pseudojervine and jervine, rubijervine and protoveratrine, respectively.[1] The experiments were not extended further, since it appeared that this method could not readily be used for the differentiation of the Veratrum species examined.

PHARMACOLOGICAL CHARACTERISTICS.

Many authors have given some attention to the pharmacological characteristics of either *Veratrum album* or *Veratrum viride*. Some authors have even made comparative studies. No report of pharmacological work for *Veratrum californicum* and *Veratrum nigrum*, however, has been found in the literature.

The discussion of this subject by Cramer,[39] Casseday,[36] and Wood[42] may be of interest.

Wood states: "In a study of the comparative effect of the two rhizomes, in 1899 the conclusion was reached that, although, as a rule, the white hellebore was somewhat the more toxic of the two, the differences between them were no greater than might exist between individual specimens of *Veratrum viride*. I believe, however, that the recognition of the two plants as identical was progressing backward." Hewlett[40] states: "The effect of *Veratrum album* on the pulse rate and the blood pressure of man has been recently studied by Collins[37] who found that large therapeutic doses reduced both the pulse rate and the blood pressure, and that these reductions may occur in certain cases without unpleasant gastro-intestinal symptoms. We have repeated these observations, using the hospital tincture of the fluidextract of *Veratrum viride*, and were able to confirm Collins' observations. The effective dose, however, was considerably larger than that used by Collins, and it is evident that some method of standardization will be necessary if veratrum is to be employed in general practice." Collins[38] and Hanzlik state: "It appeared also that the preparations of *Veratrum album* were more toxic than the preparation of *V. viride* examined by Pilcher." Pilcher[41] states: "But one tincture of *Veratrum album* was obtainable, so that, while it was more toxic than any of the viride solutions, conclusions cannot be drawn relative to the activity of the two species of veratrum until further samples are on hand."

It is evident, therefore, that further work should be done by pharmacologists on both of these forms. It is hoped that in such investigation definitely identified samples will be used and that the study of the alkaloids isolated therefrom will be included.

Summary.

(1) The character of the alkaloids of *Veratrum album* does not appear to differ much from that of the alkaloids of *Veratrum viride*. The alkaloid content in both species varies within the same limits, so that no differentiation of species is possible on the basis of alkaloidal content. Microsublimation indicates close chemical relationship but does not permit of ready differentiation.

(2) The close relationship of *Veratrum viride* and *Veratrum album* demonstrated in Part I and the close chemical relationship indicated by the chemical findings here reported seem to justify the adoption of the same standards for the medicinal material obtained from both species. The standards suggested for the medicinal drugs are at least 1 percent for alkaloids and not more than 8 percent total nor more than 4 percent acid-insoluble ash.

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DISTRIBUTION OF CERTAIN DRUGS BETWEEN IMMISCIBLE SOLVENTS.*

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Of the many medicinal preparations examined by this laboratory, those containing analgesic and antipyretic agents have been fruitful fields for various lines of investigation. In the isolation of these substances preliminary to their quantitative determination, recourse was frequently had to the use of immiscible solvents such as aqueous solutions and chloroform, the latter preferably on account of its physical properties and consequent ease of separation and recovery. During the earlier stages of the work, the relative volumes of the solvents, as well as the number of extractions deemed necessary or expedient for complete isolation of the substance sought, were governed largely by empirical considerations, care being taken, however, that any error of commission should involve an excess rather than a deficiency in organic solvent. In operations with caffeine and antipyrine, for example, substances possessing about equal solubility in chloroform but differing widely in this respect toward water (1 Gm. of caffeine is soluble in 46 cc, 1 Gm. of antipyrine, on the other hand, in less than 1 cc of water), it was assumed that, given like volumes, antipyrine would require a greater number of extractions than caffeine. From preliminary experiments on controls, carried out in the usual way with the

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Squibb type of separatory funnel at the room temperature, results were obtained quite different from those anticipated. Thus, in "shaking out" caffeine and antipyrine with chloroform, one such treatment effected the following recoveries from aqueous solutions.

TABLE I.—RECOVERY OF CAFFEINE AND ANTIPYRINE WITH CHLOROFORM.

Subs. in Aq. Soln. Gm.	$CHCl_3$ Cc.	H_2O Cc.	Caffeine %.	Antipyrine Recovery.
0.1000	50	20	98.2	98.0
0.1000	50	20	98.1	...
0.1000	50	20[a]	97.5	96.0
0.1000	50	20[b]	97.6	..
0.1000	20	20	94.3	94.0
0.1000	20	50	88.1	88.0
0.2000	50	20	..	97.0
0.5000	50	20	..	97.5
1.0000	50	20	..	96.0

[a] Acidified with H_2SO_4.
[b] Made alkaline with NaOH.

These findings seemed to indicate that under more nearly ideal conditions involving moderate to low concentrations the distribution ratios of caffeine and antipyrine between aqueous solutions and chloroform might be almost, if not quite, identical. The results as above tabulated formed the material for a preliminary communication to the Society at its 49th (Spring) meeting in Cincinnati, and in effect constituted the main incentive to the present study. Owing to the intervening war, however, and the consequent interruption to the normal activities of the Bureau, the final solution of the problem has involved a period of time far in excess of that originally contemplated.

CAFFEINE.

In order to gather more precise information relative to some of the factors influencing distribution, such as temperature, concentration, alcohol, acid, alkali and other solutes, several series of experiments were carried out, at first in a so-called constant temperature room at about 19.5°, later in a water-bath maintained at different temperatures, but accurate to within 1°. The pipet employed in this work for withdrawing the chloroform was specially prepared by drawing out the tip of an ordinary 25-cc instrument to a capillary about 10 cm. in length, and adjusting the volume by blowing a small bulb in the stem to 25 00 ± 0.02 cc as determined by the weight of water delivered.

Effect of Temperature.—In these and the following experiments, portions of anhydrous caffeine[1] were weighed out in small glass capsules and placed in glass-stoppered bottles of about 150-cc capacity, and then by means of a pipet prepared as above 50 cc of water and 50 cc of chloroform were added, the bottles were tightly stoppered and placed in a water-bath at the desired temperature, shaken vigorously at intervals and finally allowed to stand until the water and chloroform layers had become clear. Meanwhile, and in order to forestall any possible intake of the aqueous layer preparatory to withdrawal of the chloroform aliquot a minute bulb was blown at the extreme tip of the pipet, sufficiently thin to be easily crushed

[1] The caffeine used was a well-known commercial brand, recrystallized from water and dried at 100°.

by gentle pressure against the bottom of the container, 25 cc of the chloroform was withdrawn and run into a tared beaker. The solvent was then evaporated by an air blast and gentle heat, and the beaker and contents were weighed. The difference in weight multiplied by two[1] represents the amount of caffeine in the chloroform layer. The results obtained in the first extractions are given below.

TABLE II.—EFFECT OF TEMPERATURE UPON EXTRACTION WITH CHLOROFORM.

Total Caffeine Gm.	Temp. °C.	Caffeine in 25 cc of $CHCl_3$ Gm.	Recovery %
0.5000	12	0.2407	96.3
0.5000	21	0.2383	95.3
0.5000	30	0.2357	94.3
0.5000	40	0.2330	93.2

It is evident that a low temperature is favorable to the extraction of caffeine from water by means of chloroform.

Effect of Concentration.—A series of experiments similar to the above was carried out in the constant-temperature room at about 19.5° but with varying concentration of caffeine, with the following results.

TABLE III.—EFFECT OF CONCENTRATION OF CAFFEINE UPON EXTRACTION.

Total Caffeine Gm.	Caffeine in 25 Cc of $CHCl_3$ Gm.	Recovery %
0.1000	0.0480	96.0
0.2000	0.0958	95.8
0.5000	0.2376	95.0
1.0000	0.4702	94.0
2.0000	0.9240	92.4
2.5000	1.1400	91.2
5.0000	2.1710	86.8

The above findings show that the distribution is more favorable to the chloroform in dilute solution, *i. e.*, that the recovery of caffeine decreases with increase in concentration in water.

Effect of Alcohol.—Since U. S. P. chloroform contains 0.6 to 1.0% of alcohol, it was of interest to determine how much, if at all, distribution would be influenced by its presence. A similar series of experiments was therefore carried out, using instead of pure chloroform a mixture containing 1% of alcohol, prepared by diluting 5 cc of absolute alcohol to 500 cc with chloroform. These experiments were likewise conducted at the uniform temperature of 19.5°.

TABLE IV.—EFFECT OF ALCOHOL IN CHLOROFORM UPON EXTRACTION OF CAFFEINE.

Total Caffeine Gm.	Caffeine in 25 Cc of $CHCl_3$ Gm.	Recovery %
0.1000	0.0483	96.6
0.2000	0.0964	96.4
0.5000	0.2403	96.1
1.0000	0.4752	95.0
2.5000	1.1500	92.0
5.0000	2.1810	87.2

[1] On the assumption that the volume of the chloroform layer is the same as that introduced. This is of course not strictly true, since the caffeine increases the volume slightly. Another conceivable source of error would be in a change in the volumes of water and chloroform on shaking, owing to mutual solubility, but tests indicated that this is inappreciable.

These percentages are in all probability somewhat too high, due to the fact that most of the alcohol passes into the water on shaking, with consequent diminution of the chloroform layer, the 25-cc portion removed representing slightly more than $^1/_2$ of the total volume. A more accurate method would undoubtedly be to use a 1% solution of alcohol in water, and alcohol-free chloroform.

Effect of Acid.—The feebly basic character of caffeine makes the study of its extraction from acid solutions of considerable interest. Accordingly experiments were undertaken to determine its distribution between pure chloroform and N sulphuric acid, 50 cc of each reagent being taken. The temperature in this series was maintained at 20.4°.

TABLE V.—EFFECT OF ACID SOLUTIONS UPON EXTRACTION OF CAFFEINE.

Total Caffeine Gm.	Caffeine in 25 Cc of $CHCl_3$ Gm.	Recovery %.
0.1000	0.0455	91.0
0.2000	0.0908	90.8
0.5000	0.2255	90.2
1.0000	0.4463	89.3
2.5000	1.0795	86.4
5.0000	2.0410	81.6

These results are what might be reasonably expected, showing as they do a somewhat less efficient extraction from an acid solution. Beal and Lewis,[1] on the other hand, operating on 0.2-Gm. samples of caffeine in 25-cc portions of 0.5 N, 0.25 N and 0.125 N sulphuric acid with 20-cc portions of chloroform, report higher recoveries for caffeine than were obtained from a similar operation on a neutral aqueous solution. The accompanying Fig. 1 affords a graphical representation of results obtained in the above three series.

Effect of Other Solutes.—The influence of various solutes, as ammonium hydroxide, sodium hydroxide, sodium acetate, sodium salicylate, sucrose and citric acid, was observed in a few preliminary experiments with the Squibb type of separatory funnel at a temperature of about 25°.

TABLE VI.—EFFECT OF OTHER SOLUTES UPON EXTRACTION OF CAFFEINE.

Total Caffeine Gm.	$CHCl_3$ Cc.	% Cc.	Aqueous Solvent.	Recovery %.
0.5000	25	20	H_2O + 5 cc of 28% NH_4OH	94.1
0.5000	25	20	H_2O + 5 cc of 5% NaOH	95.5
0.5000	50	50	Mol. Na acetate sol.	96.6
0.5000	25	25	Mol. Na salicylate sol.	20.7
0.5000	25	25	0.1 mol. Na salicylate sol.	82.0
0.2000	50	50	Mol. sucrose sol.	96.4
0.5000	25	25	Mol. citric acid sol.	85.2

Of these and other solutes examined in this manner, sodium salicylate appears to have by far the greatest effect on the distribution ratio, due apparently to the formation of some molecular compound not readily yielding its caffeine component to the chloroform.

Constant Temperature Bath.—In order to control temperature conditions more accurately, a tank was constructed of sheet copper, elliptical in form, with double walls inclosing an insulating space 25 mm. thick, packed with "mineral wool." The inside dimensions were length 70 cm., width 50 cm., and depth 45 cm., thus affording a capacity of about 150 liters. A tubular vertical shaft at the lower end carried, in addition to a set of stirring blades, a curved cross tube (hydraulic tourniquet

[1] Beal and Lewis, JOUR. A. PH. A., 5, 824, 1916.

or Barker's mill type), and a glass mercury-cup seal at the top similar to that illustrated by Hudson,[1] which, being connected by rubber tubing with a jacket of glass tubing 38 mm. in diameter containing either a pipet or buret as the experiment required, served as a pump for drawing water from the bath, and thus gave vigorous circulation and maintained the pipet (or buret) with its contents at the same temperature. A temperature control within 0.01° was secured by means of a hydrogen-sealed mercury thermo-regulator of the general type described by Clark,[2] heat being supplied by two 100-watt carbon lamps submerged in the water and controlled by a relay in the usual manner, which served to maintain the bath at 25° when the room was not below 20°, and also to illuminate the interior. In the event of temperatures lower than 20°, additional heat could be supplied by means of an auxiliary resistance coil. The temperature of 25° was selected because of its convenience and close approximation to ordinary laboratory conditions, also because it is the standard of the U. S. Pharmacopoeia. For convenient observation of the temperature, a Beckmann thermometer was used, the reading corresponding to 25.00° being determined by comparison with two calibrated (Bureau of Standards) thermometers reading to 0.01°. Midway of the tank was a submerged horizontal shaft so geared as to rotate about 20 times per minute, carrying spring clamps suitable for holding bottles. These were of the type known as "German tinctures," having flat-topped glass stoppers. They were very carefully tested for leakage before use. A basket at the side of the tank was provided for allowing the bottles to stand submerged to the necks for any period of time desired.

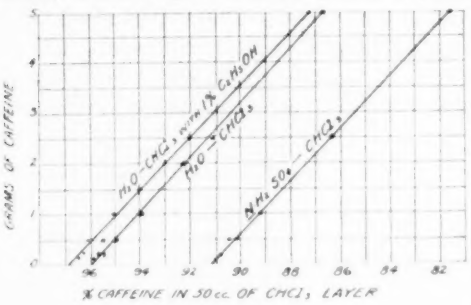

Fig. 1.

TABLE VII.—SOLUBILITIES OF CAFFEINE IN VARIOUS AQUEOUS SOLUTIONS.

Solvent.	Caffeine in 10 Cc. Gm.[a]	Gm.
Water	0.2133	0.2072
	0.2199	0.2063
	0.2183	0.2074
	0.2316	0.2076
		Mean, 0.2071
N sulphuric acid	0.3495	0.3361
	0.3526	0.3351
N citric acid		0.6406
		0.6417
N potassium bromide		0.2135
		0.2137
2.5 *N* potassium bromide		0.2031
		0.2041
N sodium salicylate	2.282	2.221
	2.278	2.222
	2.274	2.222
0.1 *N* sodium salicylate		0.4930
		0.4913
N sodium benzoate		1.545
		1.527
		1.511
0.1 *N* sodium benzoate		0.3431
		0.3414

[a] These values are unquestionably too high, being the result of earlier operations not strictly in accord with the above method.

[1] Hudson, *Jour. Am. Chem. Soc.*, 30, 1572, 1908.

[2] Clark, *Ibid.*, 35, 1889, 1913.

SOLUBILITY OF CAFFEINE.

In connection with the work on distribution, it was deemed advisable to acquire additional information on the solubility of caffeine in both water and certain aqueous solutions, the more so since the values obtained in some of the earlier experiments were unquestionably too high, due to supersaturation. Considerable difficulty was experienced in overcoming this condition. Starting with anhydrous caffeine, a much larger apparent solubility is obtained, hence it is necessary to convert the substance into its hydrated form by solution and redeposition before a true equilibrium is established. If sufficient caffeine is originally taken such supersaturated solutions yield a dense mass of hydrated crystals from which no solution can be separated conveniently. The anhydrous form, therefore, has a much greater solubility, but is unstable under these conditions. The method as finally developed for caffeine is essentially that outlined above.

Method.—Bottles containing the solvent and an excess of caffeine were allowed to stand for 3 days (or until the separation of crystals appeared to be complete), then rotated for 2 hours, and allowed to stand for another 2 hours in the bath. Portions of the clear solution were thereupon withdrawn by means of the water-jacketed pipet referred to above, and, in the case of water, run directly into tared beakers for evaporation, or into separatory funnels for extraction of the caffeine with chloroform from the other aqueous media employed.

The relatively high values obtained in certain of these experiments, notably in the case of sodium salicylate and benzoate, point to the existence of molecular compounds having a higher solubility than caffeine itself. The existence of such compounds has already been assumed by Daudt,[1] but so far as known no satisfactory proof has as yet been adduced.

Cryoscopic Experiments.—In order to obtain further information on the increased solubility of caffeine in salicylate and benzoate solutions, and on the nature of the combinations existing therein, experiments were undertaken with solutions containing these solutes singly and in admixture, using the ordinary Beckmann freezing-point apparatus. The results obtained are given below, being averages of several determinations.

TABLE VIII.—FREEZING-POINT DEPRESSIONS.

Solute in 100 cc.	Depression ° C.	
Caffeine, 1 Gm.	0.08	
Sodium salicylate, 1 Gm.	0.23	
Caffeine + sod. salicylate, each 1 Gm.	0.233	(0.31°)[a]
Sodium salicylate, 0.824 Gm.[b]	0.20	
Caff. 1 Gm. + sod. salicylate 0.824 Gm.	0.20	(0.28°)[a]
Sodium benzoate, 0.742 Gm.[b]	0.22	
Caff. 1 Gm. + sod. benzoate 0.742 Gm.	0.26	(0.30°)[a]

[a] Sums of the depressions of single solutes.

[b] These amounts represent the molecular equivalent of 1 gram of caffeine.

The above values clearly show that, in the case of sodium salicylate solutions, the addition of a molecular equivalent of caffeine produces no further depression of the freezing point; and, in the case of sodium benzoate solutions, the addition of a molecular equivalent of caffeine produces only about $^1/_2$ the depression to be expected. These results are in apparent harmony with those obtained in the solubility tests, and, as will later appear, in the distribution studies.

Distribution.—In the experiments on caffeine enumerated below, the chloroform and aqueous solutions were brought to 25° by standing in the constant-temperature bath; then, by means of the jacketed pipets referred to previously, were measured into bottles containing weighed amounts of caffeine, the aqueous layer being introduced first in order to minimize loss by evaporation. The bottles were tightly stoppered and, to insure that they remained so, cork discs were laid over the stoppers and spring clamps applied to hold them firmly in place. After rotating for two hours, and standing for about the same period in the bath as in the case of the solubility experiments, half aliquot portions of the chloroform layer were with-

[1] Daudt, *Pharm. Ztg.*, 32, 376, 1887.

drawn by jacketed capillary-tipped pipets and run into tared beakers for evaporation. In the cases where salts were present an additional precaution was taken of washing with a small portion of water in a separatory funnel, the chloroform aliquot removed, the water then being exhausted of any dissolved caffeine by two small portions of chloroform, and all of the latter solvent evaporated in a tared beaker. The results obtained in the several series are as follows.

TABLE IX.—DISTRIBUTION EXPERIMENTS WITH CAFFEINE.

Total Caffeine Gm.	Aqueous Solvent Cc.	Chloroform Cc.	Caffeine Gm.	Recovery %.
I. Water and absolute chloroform.				
0.1000	50	50	0.0479	95.8
0.2000	50	50	0.0957	95.7
0.5000	50	50	0.2368	94.7
1.0000	50	50	0.4685	93.7
1.0000	20	20	0.4575	91.5
2.0000	20	20	0.866	86.6
1.0000	20	20	0.455	91.0
2.0000	20	20	0.864	86.4
1.0000	20	20	0.457	91.4
2.0000	20	20	0.865	86.5
II. *N* sulph. acid and abs. chlorof.				
0.1000	50	50	0.0455	91.0
0.5000	50	50	0.2232	89.3
1.0000	50	50	0.4434	88.7
0.1000	50	50	0.0456	91.2
0.1000	50	50	0.0450	90.0
0.1000	50	50	0.0453	90.6
0.2000	50	50	0.0904	90.4
0.2000	50	50	0.0898	89.8
0.2000	50	50	0.0911	91.1
0.5000	50	50	0.2238	89.5
1.0000	20	20	0.4307	86.1
2.0000	20	20	0.8166	81.7
III. *N* potass. brom. and abs. chlorof.				
0.1000	50	50	0.0482	96.4
0.1000	50	50	0.0485	97.0
0.1000	50	50	0.0483	96.6
0.2000	50	50	0.0958	95.8
0.2000	50	50	0.0964	96.4
0.2000	50	50	0.0957	95.7
0.2000	50	50	0.0957	95.7
0.5000	50	50	0.2373	94.9
0.5000	50	50	0.2379	95.2
1.0000	50	50	0.4702	94.0
1.0000	50	50	0.4709	94.2
1.0000	20	20	0.4567	91.3
2.0000	20	20	0.8671	86.7
IV. 0.1 *N* sod. salicyl. and abs. chlorof.				
0.1000	50	50	0.0427	85.4
0.2000	50	50	0.0848	84.8
0.5000	50	50	0.2094	83.8
1.0000	50	50	0.4147	82.9
0.1000	50	50	0.0426	85.2
1.0000	20	20	0.4021	80.4
2.0000	20	20	0.7641	76.4
1.0000	20	20	0.4012	80.2
2.0000	20	20	0.7615	76.2
2.0000	20	20	0.7644	76.4
V. 0.1 *N* sod. benz. and abs. chlorof.				
0.1000	50	50	0.0466	93.2
0.2000	50	50	0.0922	92.2
0.5000	50	50	0.2288	91.5
1.0000	50	50	0.4532	90.6
1.0000	20	20	0.4375	87.5
2.0000	20	20	0.8249	82.5
0.1000	50	50	0.0466	93.2
0.1000	50	50	0.0459	91.8
0.2000	50	50	0.0926	92.6

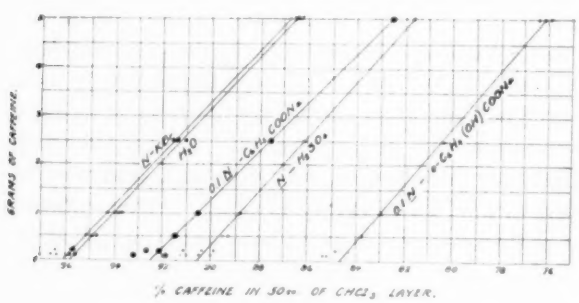

Fig. 2.

A graphical representation of these data is given in Fig. 2, from which the relatively slight effect of potassium bromide, as contrasted with that of the other solutes, is immediately apparent. Since the percentage error in the case of small amounts of caffeine is naturally much greater than when larger quantities are em-

ployed, the exact course of the line at such low concentrations becomes difficult of determination.

ANTIPYRINE.

The procedure followed in studying the distribution of antipyrine between absolute chloroform and aqueous solutions was in the main quite similar to that described for caffeine, with this difference, however, that instead of weighing the recovered product directly the residues obtained on evaporation of the chloroform half-aliquots, which are withdrawn after rotation in the constant-temperature bath, were titrated either as a whole (in alcoholic solution with iodine in the presence of mercuric chloride), or as aliquots, according to the method of Bougault.[1] As a preliminary thereto, a few tests were carried out in Squibb separatory funnels at 25° with U. S. P. chloroform and aqueous solutions of sodium acetate, potassium bromide, sucrose and sulphuric acid. The results obtained in these operations are indicated below.

TABLE X.—CHLOROFORM EXTRACTION OF ANTIPYRINE.

50 cc of chloroform used in each experiment.

Total antipyrine Gm.	Aqueous Solvent.	Recovery %.
0.1000	50 cc mol. Na acetate	95.6
0.1000	50 cc mol. K bromide	95.9
0.2000	50 cc mol. sucrose	95.8
0.1000	50 cc *N* H_2SO_4	54.2

The values yielded by the use of bottle containers in connection with the constant-temperature bath are given in the following series.

TABLE XI.—DISTRIBUTION EXPERIMENTS WITH ANTIPYRINE.

Total Antipyrine Gm.	Aqueous Solvent Cc.	Chloroform Cc.	Antipyrine by Titration Gm.	%
VI. Water and absolute chloroform.				
0.1000	50	50	0.0481	96.2
0.2000	50	50	0.0959	95.9
0.5000	50	50	0.2368	94.7
1.0000	50	50	0.4698	94.0
1.0000	20	20	0.4605	92.1
2.0000	20	20	0.884	88.4
VII. *N* sulphuric acid and absolute chloroform.				
0.1000	50	50	0.0273	54.6
0.2000	50	50	0.0529	52.9
0.5000	50	50	0.1339	53.6
1.0000	50	50	0.2662	53.2
1.0000	20	20	0.2685	53.7
2.0000	20	20	0.5432	54.3
2.0000	20	20	0.5426	54.3
0.5000	50	50	0.1341	53.6
VIII. 0.1 *N* sodium salicylate and absolute chloroform.				
0.1000	50	50	0.0477	95.4
0.2000	50	50	0.0947	94.7
2.0000	20	20	0.8750	87.5
0.5000	50	50	0.2354	94.2
1.0000	20	20	0.4584	91.7
1.0000	20	20	0.4576	91.5
0.1000	50	50	0.0477	95.4
1.0000	50	50	0.4672	93.4

[1] Bougault, *J. pharm. chim.*, 1, 858, 1898.

Fig. 3 is a graphical representation of the results shown in the last three series.

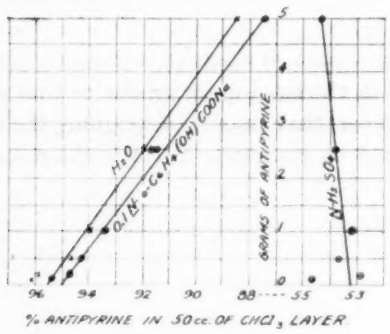

Fig. 3.

A study of these data shows that there is no such tendency to the formation of double salts as obtains in the case of caffeine (cf. Series IV and VIII). There is, on the other hand, a far greater depression in the percentage of antipyrine extracted from *N* sulphuric acid, when compared with that from purely aqueous solution, due presumably to difference in basicity.

p-ACETOXY-ACETANILIDE.

As a preliminary to more refined work on the behavior of this substance when agitated with water and U. S. P. chloroform, a few experiments were carried out in the usual way with separatory funnels at a temperature of about 20°. The material employed in this and all subsequent work was a carefully recrystallized product melting at 150–151°. The results obtained, as also the quantities of solute and solvents involved, are indicated below.

TABLE XII.—RECOVERY OF *p*-ACETOXY-ACETANILIDE.

Total Solute Gm.	Water Cc.	Chloroform Cc.	Recovery in 1st Extn. Gm.	Recovery in 1st Extn. %
0.1000	25	25	0.0891	89.1
0.1000	25	25	0.0891	89.1
0.1000	10	25	0.0953	95.3
0.1000	25	10	0.0776	77.6

These results reflect a somewhat lower distribution ratio than obtains for either caffeine or antipyrine under like treatment.

Solubility.—Preparatory to a more exact study on distribution, some information was deemed essential with respect to the solubility of *p*-acetoxy-acetanilide, notably in water and absolute chloroform. The method followed in this case was quite similar to that described under caffeine, with the exception that the bottles containing the solvent and excess of solute were rotated immediately upon receipt of their respective charges at 25° in the constant-temperature bath. The amounts of solute found in these experiments were as follows.

SOLUBILITY OF *p*-ACETOXY-ACETANILIDE.

Solvent.	Solute in 10 cc. Gm.
Water	0.0237
	0.0238
	0.0240
	Mean, 0.0239
Chloroform	0.3250
	0.3251
	0.3248
	Mean, 0.3250

Distribution.—The procedure followed in arriving at the results tabulated below, especially as regards the temperature (25°) and manipulation of aliquots, is entirely comparable with that previously described for caffeine.

TABLE XIII.—DISTRIBUTION EXPERIMENTS WITH *p*-ACETOXY-ACETANILIDE.

Total Solute Gm.	Chloroform Cc.	Water Cc.	Solute in 10 Cc. $CHCl_3$. Gm.	$CHCl_3$. %	H_2O. Gm.	H_2O. %	Total Recovery %
1.2000[a]	25	25	0.3547	..	0.0254	..	..
0.8000			0.2964	92.6	0.0205	6.4	99.0
0.8000			0.2964	92.6	0.0200	6.3	98.9
0.4000			0.1469	91.8	0.0123	7.7	99.5
0.2000			0.0726	90.7	0.0069	8.6	99.3
0.1000			0.0364	91.0	0.0040	10.0	101.0
0.8000	25	50	0.2807	87.7	0.0196	12.3	100.0
0.4000			0.1373	85.8	0.0120	15.0	100.8
0.2000			0.0672	84.0	0.0071	17.8	101.8
0.1000			0.0334	83.5	0.0037	18.5	102.0
0.8000	25	35	0.2897	90.6	0.0197	8.6	99.2
0.4000			0.1421	88.8	0.0123	10.8	99.6
0.2000			0.0700	87.5	0.0072	12.6	100.1
0.1000			0.0348	87.0	0.0043	15.0	102.0
0.8000	50	25	0.1527	95.4	0.0123	3.8	99.2
0.4000			0.0761	95.1	0.0065	4.1	99.2
0.2000			0.0380	95.0	0.0034	4.3	99.3
0.1000			0.0190	95.0	0.0024	6.0	101.0

[a] An amount of solute in excess of that soluble in both solvents combined.

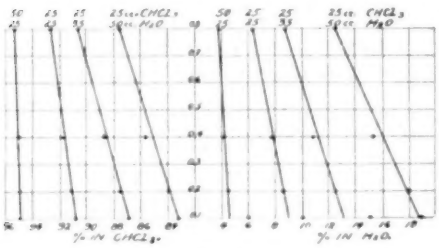

Fig. 4.

The high totals obtained in cases of small amounts of solute taken are not excessive, perhaps, in view of the factors employed in their calculation from the quantities actually weighed. The low totals, on the other hand, in cases of large amounts of solute are apparently due to the error necessarily involved in the assumption that the volumes of the solvents are unchanged by the substance dissolved. A graphical representation of the above findings is shown in Fig. 4.

It has been suggested by Marden,[1] and Marden and Elliott,[2] that the distribution ratio of a substance between two immiscible solvents be used in determining the number of extractions necessary to recover all but a negligible amount of the solute in question, as also in calculating the percentage of substance originally present in solution from data yielded by the first extraction. However attractive in principle these procedures may appear, it must be equally apparent to anyone skilled in the art that their general adoption could yield satisfactory results only under the most ideal conditions. In their practical application to many of the problems peculiar to drug analysis, one would certainly encounter grave difficulties, as in the formation of emulsions of greater or less persistence, which prevent any sharp separation of the two liquid media, more particularly, however, in cases involving two or more solutes and the possible existence of molecular compounds which, as has been noted in the work above described, markedly affect the distribution.

[1] Marden, *J. Ind. Eng. Chem.*, 6, 315, 1914.

[2] Marden and Elliott, *Ibid.*, 6, 928, 1914.

SUMMARY.

1. Studies have been made of the effect of temperature and concentration on the distribution of caffeine between water and chloroform.

2. The effect of the presence of other solutes in the aqueous layer on distribution has been determined at 25°.

3. The solubility of caffeine in water and certain aqueous solutions has been measured at 25°.

4. Further proof of the existence of molecular compounds of caffeine with sodium salicylate and sodium benzoate in aqueous solution has been obtained by cryoscopic measurements.

5. The distribution of antipyrine has been determined under similar conditions.

6. The solubility of *p*-acetoxy-acetanilide in water and chloroform has been measured at 25°. Its distribution between water and chloroform has likewise been determined.

7. Comparison of the distribution curves for caffeine and antipyrine between water and chloroform confirms the earlier assumption that the distribution ratios of these substances are nearly if not quite identical.

WASHINGTON, D. C.

HOLLYHOCK ROOT (?) FOR ALTHAEA.

BY OLIVER A. FARWELL.

There has come upon the markets of this country what purports to be althaea or marshmallow root. Superficially it bears a strong resemblance to the official drug and is of about the same size and is covered with loosened bast fibers; it is lighter colored, the longitudinal ridges are not so prominent, the grooves broader and shallower or these entirely absent; the cambium zone is circular while in Althaea it is usually angular, but in undoubted Althaea, the root often is not grooved and the cambium zone not angled; in testing for lignified tissues, we find that in the official drug the wood groups are separated, very minute and evenly distributed throughout the central cylinder; in the substitute they are less numerous, but larger, the largest forming concentric circles. It is unquestionably the root of some malvaceous plant closely related to Althaea and may be that of *Althaea rosea*, the Hollyhock, which is often used in place of Althaea.

SOURCE OF BALSAM POPLAR BUDS.

BY OLIVER A. FARWELL.

The present edition of the National Formulary allows this product to be derived from *Populus nigra* Linn or from *Populus balsamifera* Linn, the latter name interpreted as currently but wrongly applied to the northern Balsam Poplar, the proper name for which is *Populus Tacamahacca* Mill. As a question concerning the accuracy of this source arose, I determined, if possible, to verify the botanical source. While on my vacation in August, I collected branches of *P. candicans* with well-developed buds and I have seen commercial samples exactly similar; also I have seen commercial samples that agree in every particular with the buds of *P. Tacamahacca* Mill. A third sort was found upon the market that was much larger and more angled than the above mentioned.

Through the courtesy of Parke, Davis & Co., of Detroit, Mich., and of S. B. Penick & Co., of New York City, I received leafy branches with the well-developed buds of this latter kind. I identified these as the Carolina Poplar or Cottonwood, *Populus balsamifera* Linn; but to make doubly sure the specimens were sent to Dr. C. S. Sargent of the Arnold Arboretum who confirmed my identification. We therefore have Balsam Poplar buds derived from *P. Tacamahacca* Mill., *P. candicans* Ait., and *P. balsamifera* Linn. True *P. balsamifera* Linn is one of the cottonwoods that has been generally included in *P. deltoides* Marshal while the name has been misapplied to the northern Balsam Poplar, the proper name for which is *P. Tacamahacca* Mill. *P. angulata* Mx. f. is a synonym of *P. balsamifera* Linn and has sometimes been used to designate the species when given recognition. It is also probable that the common or Virginia Cottonwood, *P. balsami fera* var. *Virginiana* (Castig.) C. S. Sarg. (*P. deltoidea*, Marsh.), is a source of the Balsam Poplar buds. I have seen nothing on the market that might be classed as having been derived from *P. nigra* Linn. The proper time to collect these buds is in the spring when the trees are in full bloom and before the leaf buds have broken, so as to avoid gathering flowering buds, which could scarcely be helped if collected at any other time, the buds being developed sufficiently for gathering.

DEPARTMENT OF BOTANY,
PARKE, DAVIS & CO.,
DETROIT, MICH.

MALARIA PREVENTION AND CONTROL.

BY E. H. GANE, PH.C.

Malaria is one of the most widespread and destructive of all diseases affecting mankind. In some form or other it is prevalent all over the world and in some countries is responsible for an enormous number of deaths. In India, for example, malaria is responsible for over 100,000,000 cases of illness and an average of 1,130,000 deaths per year. In our own country it is very prevalent, more so perhaps than is generally imagined, all along the low-lying lands of the Mississippi and Missouri rivers and, in fact, in all those states which contain many rivers and marshes. There is, perhaps, no more important problem than the control and eradication of malaria in many sections of the United States. Not only does it affect the health of the people and cause many deaths, but it reduces the value of the land and, to a very large extent, the earning value of large numbers of patients who are affected with the disease but not to such an extent as to incapacitate them for light work. Many persons are infected without knowing it and the diminution in the efficiency of these people is a serious economic loss in many parts of the country.

Malarial fever, which is called by various names, such as Chills and Fever, Ague, Swamp Fever, Spring Fever, Congestive Chills, etc., is caused in only one way. Many people, including some physicians, are under the impression that it may be caused by drinking bad water, eating indigestible food or inhaling the night air. This is not so; malaria is always caused by infection and this infection is only brought about in one way, and that is, by the bite of the Anopheles female mosquito. The male mosquito does not bite. These facts have been experimentally proved over and over again by English, Italian and American investigators. Their

investigations have shown that the malarial parasite develops in the body of the mosquito and the young parasites find their way into the gland of the mosquito, whence it is injected into the human body when the mosquito bites. The young parasites take up their living in the red blood cells. These grow in size and in the course of 48 to 72 hours develop a number of young parasites by cell division, during which process the red blood cell is almost completely destroyed. The cell then bursts, setting free the young parasites and where a large number of these are set free at one time the result is to produce a well-known chill characteristic of the disease. It is easily seen that where large numbers of the blood cells are destroyed in this way, persons who are badly infected will soon become anemic from loss of red blood cells. The severity of an attack of malaria thus naturally depends on the extent of the infection. If the number of parasites is very large, with resulting production of a large amount of poison or toxin, severe illness or even death may result. If the number is very small the patient may feel languid and weak or he may not feel ill at all. It is these latter cases which are dangerous in any community because they are malaria carriers and transmit the disease to other people through the agency of the mosquito.

Some exceedingly important work has been done in the state of Mississippi during the past five years with the object of finding out if some standard treatment which would be applicable in all malarial cases could not be discovered. The International Health Board took up the problem with the department of Experimental Medicine at Tulane University working in conjunction with the Mississippi State Board of Health, Mississippi being one of the states suffering most from malarial infection. It was decided at the outset to do intensive work in one county, where it was known that a large amount of malarial fever exists. Bolivar County, Mississippi, was selected, having an area of 328 square miles and a malarial survey was made on 31,459 persons and those found to have malaria were furnished Quinine Treatment free by the International Health Board and the State Board of Health. The results of this survey proved that quinine is a specific in malaria when administered in the proper dose and for an adequate period of time.

Quinine, of course, has long been the standard remedy for malaria but results reported from all over the world were very divergent. The treatment with quinine in some instances seemed only to have a temporary effect, relapse being frequent and other drugs such as arsenic being added with a view to securing complete freedom from the infection. It is exactly one hundred years since quinine was discovered but it would seem that only during this malarial survey in Mississippi had any investigator thought it worth while to make any study of the dosage of quinine and the period during which it should be administered.

The large number of cases treated in Mississippi enabled very accurate studies to be made of the dosage for persons of all ages, and the results have been embodied in several reports from the Tulane School of Medicine.

The different salts of quinine have all been tried out and also various methods of administering with the result that the sulphate is found to be as effective as any other salt and more effective than some. The high solubility of some of the salts such as the bi-hydrochloride or chlorhydro-sulphate may in some cases be a disadvantage. Further, the drug is just as effective when administered by the

mouth and much more readily taken in this way. The reports have stated that those physicians who are inclined to give quinine hypodermically should take a few doses themselves. Administering hypodermically is painful and unnecessary. In no case is it necessary to give more than 10 grains at a time, and results have shown that the treatment given below will cure 90 percent of all cases. In only a very few cases is it necessary to continue the treatment for a longer period; some patients being an exception in some way and requiring longer treatment. The treatment worked out in this way is now known as the STANDARD TREATMENT for MALARIA and this treatment is recommended by the National Malaria Committee and also approved by the U. S. Public Health Service which has been cooperating with the local Boards of Health in several of our southern states.

The STANDARD TREATMENT for MALARIA is as follows:

For the acute attack 10 grains of Quinine Sulphate three times a day for three or four days. This controls the immediate acute symptoms. This is to be followed by 10-grain doses per day, given for a period of eight weeks. This is the dose for adults. The proportionate dose for children under one (1) year is $^1/_2$ grain; 1 year—1 grain; 2 years—2 grains; 3 and 4 years—3 grains; 5, 6 and 7 years—4 grains; 8, 9 and 10 years—6 grains; 11, 12, 13 and 14 years—8 grains; and 15 years or older 10 grains.

The failure of Quinine Treatment in many cases previously was due simply to the fact that the patient did not take the right dose or take it for a sufficient length of time. The heroic doses which are sometimes given are not necessary and may cause trouble. The important point to remember is to take or administer the quinine regularly for a given length of time. Intermittent treatment may cause a relapse, and then the full treatment has to be repeated and continued longer than eight weeks, no credit being allowed for previous treatment in the event of a relapse. In many instances a blood examination is the only way in which a person can definitely learn whether or not he is infected and therefore, in malaria infested parts of the country, it is always wise to make a blood examination of any person presenting any of the symptoms without any of the acute indications of the disorder. If all people who have contracted malaria would disinfect their blood by taking quinine continuously for eight weeks this one thing alone would enormously reduce the disease each year.

It is interesting to note that in Mississippi alone during the past six years or since this intensive malarial work has been carried on malaria has decreased to a marked extent. In 1915 there were 153,707 cases of malaria reported by the physicians of the state with 1,492 deaths; in 1920 there were only 18,376 cases and 653 deaths. There is, therefore, no reason why people should be infected with the disease if proper precautions are taken. The precautions are two in number.

1st—Avoid the bite of the mosquito, especially at night.

2nd—If infected take the Standard Treatment for eight weeks to thoroughly sterilize the blood or, in other words, to destroy the parasites in the blood by the use of quinine.

In some of the southern plantations from one-third to three-fourths of the people employed are estimated to have an attack of malaria every year. In the case of one plantation with 600 tenants the annual doctor's bill was $4,000, of which $3,000 was due to malarial disease. An examination was made and all persons

who had had malaria and who were carrying parasites were given the Standard Treatment. The result was to diminish the malarial cases by approximately 80 percent. In one town in Arkansas in three years' time 97 percent of the malaria had been eliminated by proper control movement. It is obvious that mosquito control is also highly necessary if malaria is to be completely banished. If there are no mosquitoes there will be no malaria and consequently anything that reduces the number of mosquitoes tends to reduce the prevalence of malaria. Persons who have malaria should be protected by a proper screening from mosquito bites, so as to avoid infecting mosquitoes which may transmit the disease to others. Control of mosquitoes is, naturally, a more difficult problem than that of sterilizing the malarial patient, but much can be done at little outlay to diminish the number of places where mosquitoes breed.

As a result of all the work that has been done the U. S. Public Health Service is taking steps to extend this Standard Treatment to all sections of the country where malaria is prevalent. Work has been started in the states of Georgia, Louisiana, Alabama, Mississippi, Tennessee, Arkansas, Texas, Missouri, S. Carolina and Virginia. Physicians and druggists are being asked to coöperate in this movement which is the first attempt which has been made on a very large scale to bring about a real control of this insidious disease.

RESEARCH LABORATORY,
McKESSON & ROBBINS INC.,
NEW YORK

THE MANUFACTURE OF ANHYDROUS AND HYDROUS WOOL FAT.*

BY K. F. EHMANN.

Wool fat, as the name implies, is obtained from the wool of the sheep. The fat is removed by scouring or washing the wool. The fat at this stage is known as "swint," which is an admixture of hair, dirt and soap; the color varies from a light yellow to a very dark brown, having a very disagreeable animal odor.

The swint is now placed in a steam-jacketed kettle, fitted with a suitable mechanical stirrer; cold water is run in until the kettle contains equal parts of water and crude fat, and two percent of sulphuric acid. The mixture is now stirred for at least one hour, at the end of which time steam is applied and the mixture heated to just below 100° C. Care must now be exercised, for if the fat is overheated, it will seriously interfere with the separation of the two layers, water and fat. This procedure must be continued until the wash-waters are perfectly clear and do not have an acid reaction with litmus.

At this point of the purification a sample of the crude fat is taken and tested for acidity, alkalinity of ash and iodine value. From the results it is ascertained what treatment the crude fat requires. If the fat shows a high acidity, it will then have to be treated with sodium carbonate. The use of the stronger alkalies, such as potassium or sodium hydroxide, must be avoided; they have a tendency to form a strong emulsion, which is very difficult to break. If such a condition should occur, as often it does even with the use of sodium carbonate, the process of "salting out" must be resorted to. After this, the alkaline solution should be washed out

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New Orleans meeting, 1921.

with several portions of warm water. Should the crude fat show a high iodine value, a small quantity of sodium phosphate is stirred into the warm fat and allowed to stand, with occasional stirring. After two days, the chemical is washed out with warm water. The fat is again tested, and if the results show that it comes within the limits of the Pharmacopoeia, the bleach is applied.

After bleaching, the fat is washed until analysis shows that the product meets the requirements of the Pharmacopoeia and the wash-water does not respond to the test for the bleach used. The finished product should have a light yellow color and be free of any strong animal odor. The last traces of water are removed by allowing the fat to stand in a warm kettle. A more improved method is to pass the washed fat through a high-power centrifugal.

From this anhydrous fat is made the hydrous product. As we are aware, wool fat will hold as much as thirty percent of water. This amount of water can be worked in very well, but when the product reaches the market it has a tendency to separate out. It is better to add only twenty-seven percent of water. The product is now ready to be run off into containers, direct from the emulsifier or mixer.

To conclude: Swint is an admixture of hair, dirt, soap and fat. It must be washed with an acidulated water, and is purified by successive washings. The final water is removed by allowing the fat to stand in a warm kettle or by use of a separator. The finished product should be of a very light yellow color. Hydrous wool fat is made by incorporating twenty-seven percent of water, thoroughly mixed until a smooth cream-yellow color results.

LABORATORY,
PHILADELPHIA, PA.

SOLICITING PRESCRIPTION PRACTICE.*

BY K. F. EHMANN.

In order that a successful prescription practice may be established, one must first lay proper foundation. The equipping of this department requires care and attention. Location, suitable apparatus and the convenient placing of all pharmaceuticals used are essentials, to say nothing of cleanliness; in a word it must be inviting and attractive. Going into many pharmacies an individual would get a very broad idea as to what a prescription department should and should not be—in some cases, it is the get-together room of the neighborhood, where all the happenings of the day are gone over.

After it is completely equipped, the next consideration must be given to the containers for prescriptions—the bottles, corks, labels and caps. For capsules or tablets, a metal screw-cap vial is best suited, with the label on the inside. Powders have a better appearance in hinged boxes. The advantages of neat-looking packages are many and well worth the investment. A legibly written label, on a clean container, is a very good advertisement; it attracts the doctor and the patient; the appearance of the finished prescription when it arrives at the sick room is the silent salesman for the pharmacy from whence it came.

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* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New Orleans meeting, 1921.

Another point of great value in building up a prescription practice is to invite the physician to inspect the department in which prescriptions are filled. This may be done by personal invitation or by letter. If, while the doctor is making this visit, you call to his attention new methods of administering medicaments, or some special feature you may have for taking care of them, you would be helping the doctor, as well as fixing in his mind your qualifications for that work.

In order that the pharmacist may solicit a prescription practice, he must have a selected physicians' mailing list. A personal letter to each doctor, once every month, calling to mind some particular work or some special way you may have of taking care of prescriptions, will prove very beneficial. Envelope inserts are very useful at times. The same may be said of prescription blanks with the doctor's name printed thereon. One thought must always be borne in mind, that an air of refinement and professionalism should obtain with all the work.

The location and equipment of the prescription department having been selected and the doctor invited to inspect this department, it is now your duty to give prompt and efficient service. Many patrons of a pharmacy are driven away through poor or indifferent delivery and as the great out-standing slogan to-day is *service*, your success depends to a great extent on carrying this into effect.

To conclude: in order to solicit a prescription practice, one must obtain the proper place, proper equipment and the proper service. Success depends upon the perfection of details. Earnest and conscientious service, with a desire to serve and please, will assure the coöperation of the physician and the patronage of the laity.

EXPIRATION DATES FOR UNSTABLE MEDICINES.*

BY E. C. AUSTIN.

In the category of remedies used for the treatment of disease there are many, as every pharmacist is aware, of the class known as extemporaneous preparations, that rapidly lose their potency.

Regardless of the care used in their manufacture, and of the efforts of the pharmacist to dispense only those of standard strength, these undergo more or less deterioration when they have been in the hands of the patient but a short time.

While there are a number of signs which betray to the initiated the fact that a change is taking place in such a preparation, it is too much to expect that these signs will always be noted or properly interpreted by anyone but a pharmacist. Verbal instructions to the nurse or patient will, in many instances, help to retard decomposition, but such instructions are often imperfectly understood and likely to be soon forgotten.

It is admitted that most prescriptions and other preparations of a perishable nature are intended to be used for a short period only, and are generally dispensed in comparatively small amounts, but that does not alter the fact that very frequently they continue to be used long after they have lost their full potency and sometimes after they have become worthless or even harmful. Unless the pharmacist is present in such cases, to point out the real cause of the trouble, he is liable to be

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New Orleans meeting, 1921.

credited with dispensing poor medicine, or the medicine itself may be held accountable, and no longer prescribed.

Since it is seldom practicable for the pharmacist to follow his preparations to the bedside it would seem that out of consideration for the patient's welfare, and for the good of his reputation, he should endeavor to encourage the use of active medicines by stating upon the label the proper method for conserving, and the approximate date beyond which they should not be used.

Medication in the hospitals is supposed to be under somewhat better control than is the case in the physician's private practice, but even here such a check is desirable for the reason that drugs and their preparations, after leaving the drug department, are in charge of, and administered by students under the supervision of head nurses who, sometimes, are undergraduates themselves. All these are expected to acquire a rudimentary knowledge of pharmacy, but few possess more than this, except in those hospitals where the pharmacist interests himself in their education.

In any institution there is no reason why the pharmacist should not consider it a part of his duty to prevent the administration of deteriorated medicines. In fact, it may almost be said that only by so doing will he be rendering the full service which he is capable of, and the service which his position demands of him. Taken in connection with his periodic inspection of the medicine closets throughout the house, such a system of labeling would materially increase the efficiency of the treatments and would enhance the reputation of the pharmacist.

THE IDEAL HOSPITAL PHARMACY.*

BY FRANCES M. GREENWALT.[1]

To the casual observer one hospital pharmacy is about like another, but to us who are interested chiefly in that phase of our profession there is almost as much individuality about each drug room as there is about its dispenser.

I do not claim that I operate a perfect pharmacy, nor have I the privilege of making every change deemed advisable, but I have endeavored to arrange our pharmacy as well as possible under the existing conditions in our hospital. I have been rewarded in no small degree by such comments as these from the doctors —"I have never seen a more complete stock of drugs in any drug store," and "I have never had so little trouble in having my prescriptions filled with promptness and without substitution as I have here." I have heard nurses say, "We never have to wait for our drugs very long in this hospital." Salesmen, too, have made very complimentary remarks relative to the well-arranged stock and its neat appearance. Such appreciation helps to advertise our hospital, satisfies management and makes us happy.

The ideal hospital pharmacy should be centrally located. The first or main floor is perhaps the most convenient for such location. It is then near the office, convenient for deliveries, special phone calls, and communication with superintendent, bookkeeper and office employees. Our pharmacy is near the elevator, easily located by special nurses, who are often unacquainted with the hospital,

* Parts of a paper read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New Orleans meeting, 1921. For discussion see Minutes of the Section, November JOURNAL.

[1] Pharmacist St. Luke's Hospital, St. Paul, Minn.

and thus saves their time in emergency orders. It advertises the drug department to visitors and patients, because in passing to the elevator their attention is attracted to the well-stocked pharmacy, cleanly and orderly, and gives prompt service at all times. The doctors in making their rounds must pass by the pharmacy, and very often they wish to communicate with the dispenser regarding some preparation, new or old, with which they are not thoroughly familiar. Perhaps they want to know something about dosage, incompatibility or form of medication, and if they are promptly informed by the pharmacist it leaves a very good impression relative to the hospital pharmacy. They are influenced to patronize that hospital, valuable advertising for the hospital.

The dispensing room should be well lighted and well ventilated. Unfortunately the average hospital pharmacy has only artificial light. This is one of the objectionable features of our drug room. A well-lighted and well-ventilated room is conducive to good cheer, lessens fatigue, and is more inviting to the observant visitor or patient. Outside windows that can be opened without creating a draught, that blows away the powders being dispensed, are necessary.

The equipment should be complete but need not be very extensive. The following are essential—a good, accurate balance for weighing drugs in quantities less than an ounce and a more substantial one for heavier weights; three or four sizes of steel spatulas; a rubber or horn spatula; glass stirring rods; pill tile; glass plate; five or six mortars, assorted; about eight assorted graduates; percolators; infusion pot; thermometer; water-bath; large granite kettle; and two or three smaller granite pans.

The operating room can do the sterilizing that is necessary for our compounding, and the laboratory can supply us with freshly distilled water for sodium citrate solutions for transfusion, and for salvarsan treatment. If the hospital is not equipped with a still in the laboratory, a glass condenser may be used in the pharmacy for preparing small quantities of freshly distilled water. All the smaller utensils may be kept in a drawer in the prescription case, and the larger ones in a cupboard near the sink and prescription case. All used utensils are placed in the sink until there is a pause in the routine work, but an effort should be made to have all utensils cleaned and in their proper place soon after the pharmacist has finished with them. A clean sink adds to the appearance of any drug room.

The stock should be as small as possible without causing delay in filling orders. Keeping the amount invested in stock at a minimum, without creating loss or delay, is as important in the hospital as in the down-town pharmacy. Everything that can be conveniently and economically manufactured should be prepared by the pharmacist. What these items should include depends on the size of the drug room and the laboratory; some can manufacture green soap, compound cresol solution, zinc oxide ointment, others cannot. Most tinctures, elixirs, syrups, etc., should be prepared by the pharmacist.[1]

When there is a sudden demand for a new proprietary, as is often the case after a detail man has visited the doctors, I buy that preparation in as small an amount as possible. We should avoid overstocking; no one realizes better than pharmacists that there are fads in medicine.

[1] Here the question of selling preparations made with tax-free alcohol came up. See page 884, November JOUR. A. PH. A.—Editor.

Personal acquaintance with the staff of doctors is necessary for the welfare of the hospital pharmacy. Every doctor has his hobby, particularly the specialists, and we must coöperate with them; I have in mind certain heart specialists, who have found in their study of digitalis that they have better success with *Digitalis lutea* than with *D. purpurea*. They also have a preference for the tincture made from leaves grown at our State University. Since the University is not allowed to sell the tincture, I make it from the leaves obtained at the College of Pharmacy. Our doctors have pronounced it a very good preparation. They also prefer a tincture made from *Veratrum album* to one of *V. viride* and, since the tincture *Veratrum album* cannot be purchased through the manufacturer or jobber, I make it for them. The above examples are cited as opportunities for coöperation with the doctors.

Last of all we must be careful about our drug charges to the patient; there is a belief, current among the laity, that higher prices are charged by the hospitals than at retail pharmacies. With this idea in mind, we should have our prices agree with those of nearby pharmacies, and also be careful not to make our charges lower than the current fees, for we should remember that we are closely allied to and really not competitors of retail pharmacists.

HOSPITAL PHARMACY—A PLEA FOR THE FORMATION OF A SPECIAL GROUP WITHIN THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

BY EDWARD SWALLOW.[1]

When we hear of those good old times of years ago, let us remember the progress made in medicine and surgery and realize on the conditions which now obtain through the efforts of men who were not contented to leave things as they found them.

Hospital pharmacists are professional men in every sense of the word; they occupy the unique position in our profession of not being affected by profits and loss, their business is professional service only, and not concerned with selling problems. They are concerned only in doing the work accurately and conscientiously, so the patient may get the full benefit of the doctor's treatment.

Grave responsibilities rest upon the shoulders of a hospital pharmacist. He must see that the drugs and chemicals he uses are of the highest quality, and employ methods strictly according to art and science in preparing and compounding them. He is in the "stop, look and listen" attitude of mind all day so that mistakes do not get by him; he must be certain that the hypodermic solutions supplied to the wards are sterile, the Dakin solution absolutely correct and, in fact, everything must be just right or trouble will result.

The physicians attending a hospital would err in their deductions when giving certain treatments if the pharmacist used anything but standard drugs and accuracy in his work. Slip-shod methods are a crime in hospitals, as physicians base their treatment in certain diseases upon the result obtained in the wards of the hospital—

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* Parts of a paper presented to the Section on Practical Pharmacy and Dispensing, A. Ph. A., New Orleans meeting, 1921.

[1] Pharmacist out-patient department, Bellevue Hospital.

if the medicine ordered is not exactly what it should be the doctor draws wrong conclusions, to the detriment of the public health and welfare. In a hospital, the welfare of the patient is the chief concern. He is there to be cured, and the hospital pharmacist is there to use his professional services in carrying out the doctor's orders in regard to the medicines as far as compounding, preparing and supplying are concerned.

Naturally enough the methods of keeping track of alcohol, narcotics, etc., vary in different hospitals and also the formulas used; anything which will be for the betterment of the service by pharmacists will increase the importance of their position, help materially the medical profession and add to the efficient work of the hospital generally.

The proposed movement to create a special section of hospital pharmacist members of the American Pharmaceutical Association is of great importance as it will lead to an interchange of formulas, the adopting of the best methods of keeping track of things, and by affording the opportunity of solving the purely hospital problems generally, will make for higher standards in our profession. We ask for the active support of every pharmacist to make this movement a success as it is a constructive one of the highest order. This is a conception of American brains which I feel confident will, if carried out, be found of inestimable value to our profession, the hospitals, and the public.

In conclusion I wish to point out that hospital pharmacists are in a class by themselves, their problems and activities are concerned with hospital work in all its ramifications, and their aims, ambition, and ideas are along those lines which will lead to original research and efficiency—work, which will add to the dignity and usefulness of their calling, will encourage ideals of the loftiest character and result in scientific advancement and progress; it will be for the uplift of the profession in which every man in our calling is vitally interested. Actuated by this feeling I again ask every pharmacist to do his bit in making this movement to form a special group devoted to hospital pharmacists a success.

TEACHING OF BUSINESS IN COLLEGES OF PHARMACY.*

BY THEODORE J. BRADLEY AND CHARLES W. PEARSON.

During the past few years there has been an insistent demand for more and better teaching of business methods in pharmacy colleges, and the colleges must yield to this demand if they are to continue to serve pharmacy in full measure, but it will be necessary to develop the methods by which the additional work can best be done. The present course leading to the degree of Graduate in Pharmacy is designed, primarily, to prepare for the license to practice pharmacy and this is necessary for the protection of the general public. All who are to practice pharmacy must complete this minimum course, but at its end the road divides, one branch being for the comparatively few students who wish to do advanced scientific work along pharmaceutical lines; these few students are already provided for in the graduate courses leading to the degrees of Pharmaceutical Chemist and Bachelor of Science in Pharmacy, which are offered by most colleges of pharmacy.

* See page 988, December JOUR. A. PH. A., Minutes of Joint Session, Section on Education and Legislation, A. Ph. A., American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, New Orleans meeting, 1921.

The other branch is for the larger number of students who are more interested in the business aspects of pharmacy, but colleges now make little or no provision for them.

OBJECT OF THE COURSE.

The practice of pharmacy in America has become largely commercial and statistics show that professional work makes up only about ten percent of the average drug business. A thorough knowledge of pharmacy is essential, but beyond that the ordinary rules of business apply to this as to any other retail business. More and more the small proprietor is realizing that he must be efficient if he is to meet the competition of the chain store and of the department store. A thorough course in business methods if given to undergraduates would detract seriously from the professional side of pharmacy. For this reason it seems best to make this a separate graduate course. The value of training in this line is shown by the increasing attendance at business schools of college grade and the success which their graduates are meeting. Men of ambition are realizing the value of investigating what others are doing, as summed up in business courses of instruction.

METHOD OF TEACHING.

This course should be planned for those who desire training in the business methods applicable to modern pharmacy. The work should be arranged to suit the needs of those who are or expect to be proprietors and for those who will manage stores for others. It should be of college grade and therefore limited to graduates of recognized colleges of pharmacy or to registered pharmacists.

So far as practicable the method of learning by doing should be carried out. Hence as far as possible laboratory methods should be employed, and lectures and textbooks used to supplement and correlate the course rather than to furnish the basis of instruction. To this end students should be given projects to work out and then make reports to the class. This will have to be varied according to the subject since some topics will not permit of that kind of treatment. In these cases lectures and reading may be substituted.

Such a course as is outlined below should be in charge of an experienced teacher of business methods, who should be assisted by specialists or experts in the various subjects studied.

To properly teach the various subjects to be included by the above-described methods will require about twenty hours per week for the school year.

SUBJECTS TO BE INCLUDED.

The following subjects are suggested for inclusion in the course, subject to revision as the work develops. The major subjects of the course are accounting, selling, and store management. Other important subjects are advertising and law. The minor subjects are business correspondence and business organization. It is not expected that any one will adhere rigidly to the schedule announced here, but this is suggestive of what should be included.

ACCOUNTING.

Inability or unwillingness to recognize financial conditions has brought more business men into trouble than any other one cause. This course should not be taught with a view to making a bookkeeper out of a pharmacist, but to teach those facts about bookkeeping which will the better enable him to steer clear of financial

difficulties. In order to remedy mistakes in the business, it is necessary to know the cause. The accounting should enable the proprietor to see where the failure to make profits arises and to improve existing conditions.

To this end a short course in elementary accounting should precede any attempt to build up a system of accounts for the pharmacist. This elementary course should familiarize the student with the most common practices and principles of recordative accounting. On this foundation a system of accounts can be developed which should be simple and easy of operation and which will present accurate information for income tax or bank loan purposes.

Most retail storekeepers, including pharmacists, are inclined to underestimate expenses; a proper understanding of this item will not only save many dollars in taxes, but in some cases save a business from ruin. The reports to the Harvard Bureau of Business Research showed no drug store reporting less than 20 percent gross profit on sales, yet some showed net loss nevertheless, due to heavy expenses. This investigation was made for the purpose of getting reliable, scientific information for teaching purposes and is therefore an excellent guide.

The work in this course should be done by both lecture and laboratory methods, and the students should do recordative accounting and study general principles.

ADVERTISING.

Under the heading of advertising should be considered not only external advertising, but the whole subject of display for the purpose of inducing sales. The value of advertising and the extent to which it may be used should be investigated. At present advertising is less used in retail drug stores than in the jewelry and shoe trades, which have a much lower selling expense. Since the percentages are based on sales the question arises whether the sales cannot be so stimulated by advertising as to materially decrease the proportion of selling expense. This subject should be carefully examined to determine if an increased use would be profitable, and if so, in what direction to employ it.

The use of instincts, how to fix our message in the memory, how to gain attention, selecting the products to be advertised, and the appeal to varying types of customers are important topics that underlie all advertising. In window displays unity of expression, the color scheme, lighting, decoration, balance, and massing should be taken up. The advisability of other kinds of advertising and the use which may be made of each should be discussed. The value of using the assistance furnished by the wholesalers and manufacturers, how often to change the message, what constitutes good display, outdoor advertising, use of show cards, demonstrations, trial packages, calendars, coupons in advertisements, silent salesmen, and the advisability and practice of the use of premiums should be among the other topics under this head.

BUSINESS CORRESPONDENCE.

A short time should be given to the consideration of letter writing. Both form and substance should be considered and the principal letters which pharmacists need to write should be studied. A brief consideration of the choice of words and some words commonly misspelled should be included, since many will expect to write their own letters and want their correspondence to appear well. Crudities in composition do not help to give a business man standing and, while a pharmacist

cannot afford the time to make a thorough study of this subject, a few hints will prove helpful. The writing of telegrams and postal information are other topics under this head.

BUSINESS ORGANIZATION.

A study of partnerships, their formation, duties, liabilities, and dissolution should be included. How to incorporate a company should be considered, and the corporate form of organization studied and compared with the partnership form both as to advantages and operation. Banking and its relation to the pharmacist may be considered under this heading and the use which a druggist may make of banks, applications for loans included. The value of coöperative organizations, their formation and management, may come under this subject. The latter part of the course may take up the value of departmentalizing the store. An opportunity to study the chain store organization should be given those who aim to work as managers of chain stores.

LAW.

Modern business in general and pharmacy in particular is so hemmed in by law that a thorough study of this subject is desirable. First it is necessary to acquire a considerable acquaintance with the laws of contract, sales, agency, and negotiable instruments in order that the pharmacist may know his legal position in regard to goods contracted for, sales made, employees hired, and the various forms of business paper with which he deals. In addition to this he will need to know the many regulations affecting the sales of drugs, the pure foods acts, the war taxes, and other special rules which apply to his business.

SELLING.

Without sales there are no profits. How to sell becomes the most important question if a business is to exist. A store must hold its old customers and secure new ones. Advertising may bring new ones, but steady customers come only where service and satisfaction are given. Since the same opportunity to buy is open to all and in many cases the goods must be purchased from the same concern, the store must gain the confidence of the public by its service. This is scientific salesmanship. It depends on the manner in which goods are sold.

In this course an effort should be made to consider both the selling question as a whole and the individual sale of the varying commodities to be found in the store. To this end the class should investigate ways and means for disposing of the goods to the best advantage and the actual method of the sale. The class should prepare reports on methods, demonstrate successful sales talks, and study the relative merits of different selling schemes. Selling for cash and on credit should be considered.

The use of suggestion should be studied. What qualities make for a successful personality in selling, the relation instincts to purchasing, the psychological process of the sale, meeting objections, and how to handle different types of customers should be covered. Other problems that may properly belong to this subject should receive attention.

STORE MANAGEMENT.

Under this heading should be considered the many business topics not specially provided for under the other subjects. The chief topics will be commencing business, purchasing, handling stock, marking goods, and dealing with employees.

Under commencing business comes location of store, necessary capital, selection and arrangement of store fixtures, and equipment of laboratory. Under purchasing should be considered how and when to buy, terms and discounts, the relative advantages of advertised and non-advertised preparations, coöperative buying associations, purchasing job-lots, and purchasing records. In handling stock the "turnover," the care and reception of stock, systematic arrangement, stock records and shortages are to be taken into account. The importance of the first-mentioned topic may be realized from the fact that the rapidity of the turnover has been found to vary directly with the net profits. Under marking goods the cost of selling goods, the policy as to sales, and the prevention of losses and leaks should be studied.

Cleanliness, its importance and how obtained, and other practical problems of store management should receive attention. Among the miscellaneous problems treated in this course should be the relative advantage of making one's own specialties or having them manufactured by others, what pharmaceutical preparations may best be made by the average druggist, insurance, taxation, and telephone. The last three topics suggest large fields in themselves. In fact this subject of store management will take its place as one of the major parts of the year's work.

The above program is suggestive and it will need revision and development as the work progresses. The Massachusetts College of Pharmacy inaugurated such a course in September 1921, and it is hoped that a report of successful progress can be made on it later.

THE HISTORY OF THE PHILADELPHIA COLLEGE OF PHARMACY IN RELATION TO THE DEVELOPMENT OF PHARMACEUTICAL EDUCATION.*

BY JOSEPH W. ENGLAND.

The Philadelphia College of Pharmacy was founded by sixty-eight druggists and apothecaries of the City and Liberties of Philadelphia, mostly members of the Religious Society of Friends, commonly called Quakers, on February 23, 1821, in historic Carpenters' Hall, a building occupied in 1774 by the Provincial Assembly, which recommended a general Congress of all the American colonies, which Congress also met in this Hall, and within it inaugurated those measures which, after the perils of the Revolution, terminated so favorably for civil liberty in America and throughout the world. And so the birthplace of civil liberty became the birthplace of American Pharmaceutical Education.

The founding of the Philadelphia College of Pharmacy was the result of a resolution of the Board of Trustees of the University of Pennsylvania adopted on February 21, 1821, to institute a course of instruction for the students in pharmacy leading to the degree of master of pharmacy, which course, however, was never given, although on April 5, 1821, the University did, indeed, proceed so far as to confer the honorary degree of master of pharmacy upon sixteen apothecaries of Philadelphia, the first grant of a pharmaceutical degree in this country.

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* Read before Section on Historical Pharmacy, A. Ph. A., New Orleans meeting, 1921. For discussion see Minutes, December JOUR. A. PH. A., p. 966.

Prior to 1821, "in this new country, with its sparse population and vast territorial extent, its few small but growing cities scattered along the seaboard, the occasion had scarcely arisen to put into practice the obvious educational means fitted to meet these requirements; but now the time had evidently come. Every intelligent druggist and apothecary felt that the instruction which might be suitable for the student preparing himself for the duties of the physician would be only partially fitted for one who was to assume the widely different responsibilities of the drug store and dispensary" ("Historical Memoirs of the Philadelphia College of Pharmacy," Edward Parrish, *American Journal of Pharmacy*, 1869, 9).

Furthermore, the founders of the College realized that their responsibilities were not solely to provide pharmaceutical education, but also to protect the public against the adulteration and misbranding of drugs; thus, at the second meeting of the College (March 13, 1821), a committee appointed at the first meeting reported "that abuses had crept into the drug and apothecary business, instances had occurred of deteriorated drugs being introduced into the shops and valuable remedies in daily use being adulterated and sold of inferior quality, and that such abuses were attributable in part 'to want of proper pharmacological information on the part of some druggists and apothecaries who vend and of physicians who buy,' and it was recommended, with the establishment of the College, that its 'attention be constantly directed to the quality of articles brought into the drug market, subjects relating to the business and its objects be discussed, and information beneficial and instructive to the trade communicated.'"

It is of interest to note that "the first years of the College were marked by great activity. Committees of inspection were appointed to examine drugs introduced into the market, and to expose adulteration and sophistication. Latin labels were printed, carefully adapted to the official standard of nomenclature. Formulas were published for the old English remedies called 'patent medicines,' then very extensively sold, with a view to greater uniformity in their composition and properties; and the absurdly worked wrappers in which these were enveloped, giving false or exaggerated accounts of their virtues, were measurably superseded by more sensible and truthful 'directions.' Meanwhile, a library was being formed, a cabinet of the specimens collected, and the various improvements in chemistry and pharmacy suggested from time to time were investigated and reported upon" (Edward Parrish).

In this way, the College sought to prevent the manufacture and sale of adulterated or misbranded or deleterious drugs and medicines, thereby anticipating, in a sense, the enactment of the Federal Food and Drugs Act of nearly one hundred years later, but the influence of the College was wholly educational and moral, and no adequate protection was given to the public until the enactment of the Federal Food and Drug Act of 1906, one of the most righteous laws ever passed by the United States Congress.

During the first fifty years (1821–71) the instruction of the College was in materia medica, pharmacy and chemistry, and in the last four years of that period, in botany, also; and it was wholly didactic.

In 1846 an epoch-making advance was made, when pharmacy was recognized as a distinct branch by the establishment of the chair of theory and practice of pharmacy, and the chair of pharmaceutical and general chemistry was changed to chem-

istry. In 1867, the chair of materia medica was changed to materia medica and botany, and field work in botany was begun.

During the past fifty years (1871–1921) many additions to the curriculum have been made, such as analytical chemistry, practical or operative pharmacy, pharmaceutical chemistry, commercial pharmacy, pharmaceutical jurisprudence, chemical control in manufacturing pharmacy, scientific research, bacteriology, hygiene, Latin and pharmaceutical arithmetic, as well as special courses in technical chemistry, applied bacteriology, technical microscopy, physiologic assaying, clinical chemistry, advanced pharmacognosy, and perfumery, and post-graduate courses leading to the degrees of bachelor of science in pharmacy, chemistry, pharmacognosy, and bacteriology.

In 1897, the chair of materia medica and botany was divided into materia medica, including physiology, and botany, including pharmacognosy.

In 1886, when the College first occupied its present site, it had three instructors, to-day it has thirty; then 146 students, to-day more than 600; then no women students, to-day 50; then no laboratories, to-day 6; then no post-graduate courses, now four leading to degrees.

In 1920, in order to expand its courses of instruction, the charter was amended and the title changed to the Philadelphia College of Pharmacy and Science.

It is impossible at this time to more than briefly mention the teachers of the past, but during the first twenty-five years those who deserve especial mention are Samuel Jackson, George B. Wood, Joseph Carson and Franklin Bache, all of whom exercised potential influence during this formative period of American pharmacy.

During the next fifty years the list embraced such widely known authorities in pharmacy as Robert Bridges (1842–79); Edward Parrish (1864–72), the author of the first distinctively American textbook on the practice of pharmacy; John Michael Maisch (1866–93) whose constructive work for the upbuilding of pharmaceutical botany, materia medica and plant chemistry will last as long as the name of pharmacy endures; and William Procter, Jr. (1846–66, 1872–74), whose research in pharmacy gave a wonderful impetus to the growth and development of American pharmacy, made it known the world over, and won for himself the name of "The Father of American Pharmacy."

And William Procter, Jr., was succeeded by one who lived in our own time—"the noblest Roman of them all," one who as pharmacist, teacher (1874–1918), educator, author, and executive—especially as the Chairman of the Committee on Revision of the U. S. Pharmacopoeia for two successive decades—was the outstanding figure of American pharmacy in his day, the teacher of teachers, and the genial, warm-hearted, inspiring friend of us all—Joseph Price Remington. "And we ne'er shall look upon his like again."

And then there was one who stood next to Remington, one who was most largely instrumental in making the course of commercial training of the College (established in 1899, and the first of its kind in the country) so successful, who became one of the foremost figures in American industrial pharmacy, and who loved his Alma Mater and never forgot her, even unto death—Frank Gibbs Ryan!

Quizzing was early instituted at the college and was conducted first by the professors themselves, and in the late 70's by quiz-masters approved by the Committee on Instruction. In 1880, quizzes were authorized by the Alumni Association, and this constituted the cornerstone of the present system of quizzing or review; later (1886) these were combined with the College review of quizzes and made compulsory (1895), the College assuming full charge.

In 1821 the conditions of the practice of pharmacy were primitive. As Edward Parrish (*American Journal of Pharmacy*, 1871, 471) stated, in 1871, in his introductory lecture to the fiftieth course of the Philadelphia College of Pharmacy:

"Fifty years ago when the College was established, almost every considerable drug store had something like a laboratory attached, where some of the few chemicals then in use and all the galenical preparations were made, and where nearly all the crude drugs were assorted, garbled and packed. The apprentices then enjoyed a wholesale development of muscle through

wielding the ponderous pestle, handling the sieves and working the screw-press. He learned how to make pills by the wholesale, to prepare great jars of extracts and cerates, to bottle castor oil, Turlington's Balsam and opodeldoc by the gross, and what he lacked in the number of variety of articles he dealt in, was made up by a greater extent of his operations and the completeness with which, in a single establishment, all the then-known processes were practiced. Very many physicians then dispensed their own prescriptions, drawing the supplies from the druggists, but gradually the separate prescription counter was added to the drug stores, and the dispensing stores, as we now call them, became numerous, and the wholesale druggists gradually ceased to supply the public directly."

Our Quaker forbears realized that pharmacy was both an art and a science, and to be a master of the craft, the pharmaceutical student must have practical instruction as well as theoretical, and from the first they required that the candidate for graduation from the College shall have a "practical experience of at least four years with a person or persons engaged in and qualified to conduct the drug business." Thus, vocational training in pharmacy as a prerequisite for graduation was first established in this country.

About the time of the Civil War, a radical change took place in the retail drug business. The manufacturing of drugs and chemicals was taken over by manufacturing houses, more and more, the old apprenticeship custom of legally indenturing youths to learn "the drug and apothecary business" rapidly fell into disuse, and the character of practical experience in the retail drug store changed, becoming less and less adequate, so far as manufacturing was concerned; although the underlying principle of "drug-store experience," with its familiarity with work-a-day technique, continued fundamentally sound. Hence, it became evident that the College should give laboratory instruction, but the means of the College were limited, and it could not see its way clear, at this time, to give such instruction, especially as it was comtemplating the erection of new buildings in the near future.

The biggest asset of any college is its alumni, directly and indirectly—directly in exemplifying its teaching and indirectly by its work for the Alma Mater.

The Alumni Association of the Philadelphia College of Pharmacy was founded in 1864 by Edward C. Jones and Albert E. Ebert, graduates of the class of 1864, and in the year of its organization it began a movement for the raising of funds for the equipment of a chemical and pharmaceutical laboratory; by 1867 the subscriptions had amounted to nearly $5000, and in 1870 it established a laboratory for instruction in practical chemistry and pharmacy in charge of Prof. John M. Maisch, the first of its kind in America. In 1872 the laboratory was turned over to the College by the Alumni Association. In 1876 its two divisions of work were partially segregated, Prof. Remington giving a course in pharmaceutical manipulations, and in 1878 he assumed full charge of the pharmaceutical laboratory (or laboratory of operative pharmacy), while Prof. Maisch confined his instruction to the chemical laboratory. In 1903 an optional course in dispensing was inaugurated, and the following year it became part of the regular course.

In the chemical laboratory, Prof. Maisch was succeeded as director by Frederick Belding Power (1881–83), whose famous research work later in phytochemistry in the Wellcome Research Laboratory of London is known to you all, and he by Henry Trimble (1883–1898), whose research work on the tannins is classic.

The microscopical laboratory was originated, also, by the Alumni Association, commencing with 1882–83, the Association controlling the instruction in this department until 1894, when the College assumed charge of it as the botanical and microscopical laboratory.

In 1899 optional laboratory courses were established in bacteriology, the study of powdered foods and drugs, fungi and fungous diseases, morphology and physiology, and systematic botany, and in 1913 bacteriological laboratory work became a part of the regular course.

With the enactment of the Federal Food and Drugs Act of 1906, it became apparent that skilled food and drug technicians would be necessary to ensure the proper enforcement of the law, and in 1907 the College secured, largely through the personal solicitations of the late Mahlon N. Kline and Joseph P. Remington, contributions of some thousands of dollars, with which it was enabled to erect a food and drug laboratory building and inaugurate a course in food and drug analysis.

Equal in importance to pharmaceutical education is pharmaceutical research, because pharmaceutical practice is, in effect, applied education, and education is applied research; and upon the bases of research, education and practice rest the science and art of pharmacy.

The founders of the College recognized the vital importance of systematized research and in 1825–29 published irregularly a journal devoted to research under the name of the *Journal of the Philadelphia College of Pharmacy*. In 1829, the journal was issued at regular stated periods, and in 1835, the title changed to the *American Journal of Pharmacy*. It is not only the earliest periodical of its kind in the world, but it is recognized, at home and abroad, as the leading scientific pharmaceutical periodical of this country.

During the past ninety odd years, the journal has published 50,000 reading pages, a large part of which has been research work in pharmacy, chemistry, pharmacognosy and science by the faculty, members and contributors of the College. Thus: John Farr, of Farr ad Kunzi (later Powers and Weightman), in a paper read before the Philadelphia College of Pharmacy, of which he was a member, at a meeting held December 27, 1825, on the subject of "Extract of Quinine" (Proceedings of the Philadelphia College of Pharmacy, later the *American Journal of Pharmacy*, Vol. 1, No. 2, 43), made the following statement:—"In the summer and autumn of 1823, a season peculiarly memorable to Philadelphians by reason of the alarming prevalence of intermittent and other fevers, sulphate of quinine was first successfully prepared here;" three years later its discovery by Pelletier and Caventou; and it should be stated, also, that Zeitler and Rosengarten likewise made quinine sulphate in 1823, "their first sale being in December of that year," and it may be added that "morphine sulphate and morphine acetate were first manufactured by George D. Rosengarten in 1832, and the mercurials and strychnine sulphate in 1834" ("Rosengarten and Sons," by William McIntyre, *American Journal of Pharmacy*, 1904, 303). All of which activities were doubtless inspired by the spirit of original research developed by the College. And William Procter's discovery of the properties of the salicylates (1842) led to the manufacture of synthetic oil of wintergreen and the salicylates. Thomas J. Husband first developed (1837) the manufacture of heavy magnesia in this country. Robert Shoemaker first made (1848) glycerin commercially. Charles Shivers first developed the manufacture of adhesive plaster, making enormous quantities for the Government during the Civil War. William R. Warner first developed (1857) the manufacture of sugar-coated pills. Alfred Mellor and Henry N. Rittenhouse first de-

veloped the manufacture of licorice extract. And C. Lewis Diehl and William Procter, Jr., made the process of percolation commercially practicable.

The most important discovery of the 20th century—as important as that of morphine, strychnine and quinine one hundred years ago—was that of diphtheria antitoxin by Behring in collaboration with Kitasato and Wernicke in 1890 and 1892. This discovery reduced the mortality of diphtheria from 40 percent to less than 10 percent and saved millions of lives. Tetanus antitoxin was discovered by Behring and Kitasato in 1892. During the World War its value as a life-saver was amply demonstrated. Ten percent of the wounded on the battle fields of France were attacked by the tetanus bacillus and ninety percent of these died of lockjaw. The call came for tetanus antitoxin and millions of doses were supplied to the armies of the allies, resulting in the control of the deadly infection. These discoveries were speedily followed by others of equal value as life-savers. Typhoid fever, which hitherto had killed more soldiers than the bullets of the enemy, was banished from the armies by anti-typhoid vaccination.

These wonderful discoveries have largely been made available by graduates of the Philadelphia College of Pharmacy as the H. K. Mulford Company, the earliest and largest producers of biologic products in this country, promptly and successfully met, by means of an immense reserve stock, the call of the allied armies for such products during the World War.

The library of the College of 20,000 volumes, constituting probably the largest and most valuable pharmaceutical library in the United States, has been found to be of incalculable service in research work; likewise its museum and herbarium, with its many thousands of medicinal plants, its rare and typical exhibits of crude drugs, its raw materials, and its manufactured drugs from all parts of the world.

In the literature of pharmacy and allied science, the College has always been most actively represented, its faculty having issued nearly 200 volumes. Thus, the "U. S. Dispensatory" was founded in 1833 by George B. Wood and Franklin Bache, both of the faculty; John M. Maisch (with Alfred Stille, M.D.) founded the "National Standard Dispensatory" in 1879; Robert Bridges was the American editor of Fownes's "Chemistry" (1845–78), and of Graham's "Elements of Chemistry" (1852); William Procter, Jr., was the American editor of Mohr and Redwood's "Pharmacy" (1849); Edward Parrish wrote his first "Pharmacy" in 1855; Joseph P. Remington's textbook on "Pharmacy" has been the standard textbook on pharmacy since 1885 in this country and many foreign lands; John M. Maisch published in 1881 the first textbook on "Materia Medica" in this country; Henry Kraemer wrote "Applied and Economic Botany," and "Pharmacognosy" (1897–1917); Henry Trimble published his "Tannins;" Frank X. Moerk issued his "Qualitative Chemical Analysis;" Samuel P. Sadtler (with Virgil Coblentz) published his "Pharmaceutical and Medical Chemistry," and his own "Industrial Chemistry;" Heber W. Youngken issued his "Pharmaceutical Botany, and Pharmacognosy;" John W. Roddy issued his "Medical Bacteriology," and Paul S. Pittenger published his "Biochemic Drug Assay Methods;" Julius W. Sturmer, "Pharmaceutical Latin" and Pharmaceutical Arithmetic." And there were many formularies and other books published that are not now in general use.

Prior to the U. S. Pharmacopoeial Convention in 1850, pharmacists had no active part in the revision of the U. S. Pharmacopoeia, the work being done by medical men. But at the 1850 convention the Philadelphia College of Pharmacy presented for consideration "a complete revised copy of the Pharmacopoeia elaborated with ability and great industry, and the Committee accepted, after deliberate examination, nearly all the suggestions" (U. S. P. IX, X); and thus was paved the way, logically, for the representation of pharmacists in all subsequent revisions, and in all of these the College has been most ably represented. Twelve of the thirty-three present pharmaceutical members of the Committee of Revision are P. C. P. men, and the last three Revision-Committee-Chairmen—Remington, LaWall and Cook—have been (or are) members of the faculty of the College.

The American Pharmaceutical Association, which stands for the highest ideals of pharmaceutical practice and is the backbone of professional and scientific pharmacy in this country, was organized in the Philadelphia College of Pharmacy in 1852, and from the time of its organization, the faculty members and graduates of the College have been most active in its work, occupying many official positions.

Such, in brief, are some of the high-lights in the history of the Philadelphia College of Pharmacy and these indicate that the College has exercised, during the past one hundred years, a potential influence in developing pharmaceutical education, intimating many of its most forward steps.

The past is past. It is more—it is history. But the old College cannot rest upon its laurels; it must go forward or backward. Its problems, and these are many, are the problems of every other school of pharmacy in the land. And so with no feeling of unfriendly rivalry towards any other school, but with the warmest well-wishes for all, it is going to go forward and do all within its power to justify the traditions of its founders in its service for American pharmaceutical education, because it recognizes that the interest of one school is, or should be, the interest of all, and that all should work together, not for individual aggrandizement, but in all sincerity for the good of pharmaceutical education as a whole.

In the future development of the schools of pharmacy of this country, it seems to me that five things, chiefly, are essential: (1) Better education, (2) better legislation, (3) better practice, (4) better relations with the medical profession, and (5) better research work.

We must have better education, that is, higher entrance requirements, better facilities for instruction and better courses. Beginning with July 1, 1923, all schools should require high school graduation, or its equivalent, for entrance and should work for better facilities and more advanced instruction.

We must have better legislation, especially prerequisite legislation, and this need is vital, not only for the good of American pharmacy, but for the better service of the American people. To-day, less than one-half of the 48 states of the Union have prerequisite laws, and the public will not be properly served until every state of the Union has such a law; and we must have universal reciprocity between State Boards of Pharmacy, or national licensure; and we must have simpler and more efficient pharmacy laws by state and nation.

We must have better practice along professional or technical lines that will be of direct value to the medical profession in the diagnosis and treatment of

disease; there must be a sharper differentiation by the pharmacist, in his daily work, between legitimate commercial pharmacy and illegitimate, or real pharmacy will cease to be and it may be that we will have, in this country, in the future, two kinds of stores—pharmacies and drug stores—and the former for professional service and legitimate commercialism, and the latter crassly commercial.

We must have better relations with the medical profession by deserving it—by perfecting our individual abilities and directing our work primarily along professional and scientific lines that will appeal to the medical profession and win their sympathetic support. In the past we have not had this. Let us hope that the medical profession will come to realize the potential possibilities of pharmacy and allied sciences acting in coöperation with therapeutics.

Pharmacy is the study of the reaction of drugs *without* the human body, and therapeutics is the study of the reaction of drugs *within* the body, and the one cannot properly function without the other. In a word, pharmacy is the physico-chemistry of drugs, and therapeutics is the biochemistry; and practically, pharmacy is as much a part of medicine as therapeutics or any other medical branch.

We must have better research work, because research is the life-blood of education and practice. As Charles H. LaWall writes me—and what he recommends applies not only to the Philadelphia College of Pharmacy, but to all schools of pharmacy:

> "The future development of pharmacy is largely dependent upon the stimulation of research, especially its inculcation in the student-body. The work in the past has been of the highest character, but it has been done unsystematically and was largely a matter of chance that it was done at all. Men like Maisch, Procter, Remington, Sadtler, Kraemer and others have simply bubbled over with initiative, and their efforts have enriched pharmacy and made it better. To-day, however, the output is limited, because every member of the faculty is driven fullspeed in taking care of his teaching and accessory work. To overcome such a handicap, the teachers should have more assistants for instructional work. The progress of any department of the College could then be measured not only by its instructional results, but also by the quality and quantity of original work it turns out, and the College would have a standing among other scientific schools that instruction alone could not give. Furthermore, students, graduates, members of the College and others, would be inspired to follow the example of the faculty, and the field of research would be developed and coördinated."

And the field of research is practically unlimited. As John Uri Lloyd, a master in pharmacy of the Philadelphia College of Pharmacy (1897), and one whose research work in pharmacy for the past fifty years stands out like a beacon light at home and abroad, writes me: "In my opinion, the field of research is as yet scarcely invaded. Whoever enters it should, with each subject as a foundation, have his feet on the work others have accomplished, then with open mind raise his eyes to the blue sky above. He should start with a hypothesis gained from a study or experience with related products, and yet expect to fail in whatever thought had speculatively advanced. Disappointment brings then no pain. He should be so bold as to question orthodox theoretical rules and formulas, and in the face of "authority" create images and plans of procedure of his own. And yet he should be so timid as to shrink from personal criticism of others, realizing that his own self will rise before him as perhaps the one most subject to criticism under the backward glance. If concerned in the exactions of science, he should expect resistance from those whose idols he touches with even the kindliest intent. If conscious of the correctness of his views he should make no retort; *time*

will care for *fact*. If he has indiscreetly voiced false theories based on fallacious judgment, he should thank the man of the present for service rendered in his disillusionment, resting assured that *time* would later have served the same purpose. If given a moderate period of life the backward glance will surely show a pathway littered with his own broken vases, shattered into fragments by himself. The great charm of research may be defined as the construction of new edifices out of those demolished, and in plant-research, the defining and describing of natural textures and plant structures. In this the doors to be opened by the systematically trained scientists of the near future will surely make the life wonderings of empiricists, with whom this writer is to be classed, pioneer offerings serviceable perhaps mainly as an inspiration to those who follow."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each branch should see that at least three of its meetings during the year are reported in the JOURNAL.

CHICAGO.

The 124th meeting of the Chicago Branch of the American Pharmaceutical Association was held Tuesday evening February 21 at the University of Illinois School of Pharmacy Bldg., with President C. M. Snow in the chair.

The topic of the evening was "The Drug Store Laboratory."

Prof. E. N. Gathercoal introduced the discussion with an illustrated talk presenting the fact that purely ethical and highly professional pharmacy was still extensively represented in many larger and smaller cities of our country. This representation is especially noted in the large number of prescription drug stores which are appearing not only in the very large cities but in a great many of the smaller cities; in the largely increasing number of splendidly equipped and stocked hospital pharmacies and, also, by the development in connection with drug stores of biological, clinical and chemical laboratories, and yet further by the prominent place attained by pharmacists as analysts, city chemists, bacteriologists and manufacturing pharmacists.

Pictures were shown of the laboratories and stores of Hynson, Westcott & Dunning, of Baltimore, Md.; John Coleman of Wheeling, W. Va.; Henry Kraemer of Mt. Clemens, Mich.; The Prescription Shop, Joliet, Ill.; Fred Skeyhans, Rockford, Ill.; E. von Hermann, Chicago; Leonard Seltzer, Detroit, Mich.; and of the Presbyterian Hospital drug room (Wm. Gray), Chicago.

Emphasis was placed by the speaker on the fact that it was possible for thoroughly equipped young people in pharmacy to uphold the ethics and profession of pharmacy in their community and yet provide for themselves a good livelihood and a profitable business. It is true, because of the great diversity of pharmaceutical interests and the constantly increasing specialization in pharmacy, that there are many avenues open to the young men and women in pharmacy. Those who have a highly commercial instinct will seek out the more commercial side of pharmacy but those who have a more highly developed scientific side have equal opportunity to make financial success in the professional side of pharmacy.

In addition to the pictures, which illustrated well-equipped prescription stores and the proper equipment of the laboratory, an exhibit laboratory apparatus was shown. This apparatus included such items as oven sterilizers, Arnold sterilizers, pressure sterilizer, incubator, centrifuges, and modern microscopic appliances in operation.

This introductory talk was followed by an excellent, practical demonstration by G.

Boyd Law of Savanna, Ill., a member of the graduating class at the College of Pharmacy, of a blood examination, including a count of the red and white corpuscles, haemoglobin determination and the differential count of the leucocytes. Mr. Law obtained the blood from a classmate and carried through the entire demonstration very successfully, and received hearty applause. The point of the demonstration was, that while this technique involved careful study and practice, such an examination did not take a long time and, at the prices usually charged for such work, was really profitable.

Prof. Willis K. Weaver of the Department of Chemistry of the U. of I. School of Pharmacy, who is doing some clinical laboratory work at the Presbyterian Hospital, gave a splendid demonstration of some of the latest achievements in blood chemistry, presenting the latest methods for the determination of sugar, creatinine, urea, uric acid, protein, CO_2, etc., in the blood.

As representative from the prescription drug stores, Mr. E. von Hermann, in his brilliant and characteristic manner, presented the case for this type of drug store. Mr. von Hermann's store in the Gas Building, Chicago, ranks as one of the largest and most profitable stores of this kind in the world. He believes that it is not advisable to establish a laboratory in connection with the prescription drug store, claiming that for the proper development of such a store one must give it his entire time and attention. Mr. von Hermann also pointed out that success in this kind of work depends upon absolute accuracy and honesty, as well as complete knowledge in dealing with the prescriptions; that a stock sufficient to meet every need of the physician must be maintained and, especially, that such a store must seek to keep ahead of the physician and present to him the newer things in medicine before he has occasion to demand them. Furthermore, this type of store demands a constant alertness on the part of the pharmacist in establishing perfect confidence among the physicians and seeking the physicians' prescription business.

Mr. Testin of Joliet, manager of the laboratory in connection with Schick's Prescription Shop, presented, on the other hand, the advantages of combining such a laboratory with the prescription store, stating that they had not only developed an extensive laboratory business, but also very materially added to the prescription business since the establishment of their laboratory. Mr. Testin is a young man who began his studies before the war but he had an unusual opportunity to complete his education in a practical way by his services in the Sanitary Corps during the war; he stated that they are not only prepared to handle everything in the way of clinical work, but are called upon to handle even the very latest tests and developments in this line. Mr. Testin spoke in plain and simple statements, and made an especially good impression upon the younger pharmacists present.

Prof. Frank J. Zuck pointed out the many advantages that accrue to a man who devotes himself whole-heartedly to pharmacy. He used as an illustration Fred Skeyhan's pharmacy of Rockford and referred to the fine prescription drug store and the well-equipped laboratory in connection therewith, and that both of them were paying propositions. He pointed out some other sources of income to the laboratory obtainable in cities of only two or three up to five thousand inhabitants. In such cities small hospitals are being extensively established. These could not afford to employ a pharmacist or a clinical expert, but a retail pharmacist could establish a laboratory, based on the hospital business, and such a laboratory would very soon interest the physicians of a wide surrounding territory. He also pointed out that such a laboratory could draw business from the city and the county governments, as well perhaps as from manufacturing or commercial industries. Mention was made of the success already attained by Dr. and Mrs. Henry Kraemer at Mt. Clemens, Mich., where they established a laboratory in a very modest way only a year ago. They have won the confidence of the physicians of the county and also of the local officials who are bringing much work to the laboratory.

In conclusion, Chairman Snow took great pleasure in calling for short addresses from a number of the Vice-Presidents and the Executive Committeemen of the National Association of Boards of Pharmacy, who were in session in Chicago at the time. President Lucius L. Walton of Williamsport, Pa.; John Culley of Ogden, Utah; E. H. Walsdorf of New Orleans, La., and others responded. It was the general expression that while a rapid turnover could be had at the lunch counter, soda fountain, candy counter, cigar counter and other departments in a drug store, in a great many instances the real financial backing of the store lay in the prescription counter.

The attendance was large and the meeting generally considered most interesting and profitable. E. N. GATHERCOAL, *Secretary*.

DETROIT.

Before a large and appreciative audience Dr. Henry Kraemer gave an address on "Doing Things," illustrated with stereopticon views, on February 10. The meeting was preceded by a dinner participated in by the members of the Branch and their wives, the guests being Dr. and Mrs. Henry Kraemer.

Dr. Kraemer's theme was an account of the men who were achieving things in pharmacy and an analysis of those qualities which make for success. He said in part:

"The man who does things is the man whom the average American admires. Employers require men of will, that is, men in whom activity and efficiency are combined. The spirit of the pioneers is intensified in our life to-day, so that we have, as the French express it, *la vie intense*, or the strenuous life. This was variously interpreted until Roosevelt gave the world a splendid example of its richness to the man and its real service to his fellows. Success in life consists in attaining the highest end possible to one's capacity.

"The large success does not come all at once. It is usually a process of gradual growth. It is the exceptional man in his twenties who can look ahead and develop a business which will meet his ideas when he is seventy. James Vernor, of Detroit, is a most striking example of this type of success.

"Usually there is a long time of waiting. Men's ideas do not crystallize out at once but they grow with the times. Faithful service and attention to details without regard to monetary success frequently furnish men in middle life the great opportunity. This is probably best illustrated in the career of Hynson, Westcott & Dunning.

"In 1889 Henry P. Hynson and James W. Westcott, both recent graduates, entered a partnership to develop a business on original lines. They worked out their ideas as to what a professional business should consist of and they stuck to their plan, determined not to yield to any pressure which might cause them to deviate from their values. They soon commanded the respect of physicians and it was not long before the physicians connected with Johns Hopkins Hospital and others sought this store for information concerning their problems. These two boys entered with zest and enthusiasm into every problem which was presented, never counting the time or the cost and having faith that it would lead to their ultimate goal which they themselves could not clearly see.

"During the first ten years the volume of business approximated annually about $60,000. This consisted almost entirely in prescription work and in filling special orders for the sick. During the next ten years their business approximately doubled. Then they saw their opportunity and in 1911 they entered actively into the manufacturing drug specialty field. This was a natural outcome of their professional service and they are doing to-day a business of not less than a million dollars a year. Their products are known throughout the world and their reputation to-day is based largely on the character and ideals of the two young graduates in pharmacy who organized the original firm. The third member of the firm, H. A. B. Dunning, entered the employ of the firm in 1894 as an errand boy and discharged his obligations so faithfully that he rose very rapidly in the estimation of his employers and in seven years had an interest in the firm. By special attention to the laboratory problems Mr. Dunning has played a large part in shaping the present policy and larger growth of this firm of professional pharmacists. The most interesting thing of all is that the firm did not have any trained or experienced chemists attached to their organization. They were all, however, college graduates in pharmacy imbued with the spirit of scientific research and thoroughly in earnest."

Dr. Kraemer gave a number of illustrations of some of the really big problems in pharmacy and the manner of attacking them from every angle. Tooth powders, face powders, toilet preparations, insecticides were among the subjects handled very effectively. Other up-to-date problems were discussed, including the vitamines. The lecture was concluded with a number of beautifully colored slides of flowers and nature.

NEW ENGLAND.

The first regular meeting of the New England Branch, American Pharmaceutical Association, for 1922, was held at the Massachusetts College of Pharmacy, Boston, on Tuesday evening, January 31; President Florin J. Amrhein presided.

The secretary's and the treasurer's reports were read and accepted.

The following officers were elected: *President*, Leon A Thompson, Cambridge, Mass.;

Vice-President, William R. Acheson, Cambridge, Mass.; *Secretary-Treasurer*, Leslie B. Barrett, Boston, Mass.; *Representative to the Council*, Elie H. LaPierre, Cambridge, Mass.

Members of the senior class at the college, who were invited as guests of the evening, were present with good representation. After the disposal of the regular business, the president introduced as speaker of the evening, Mr. William S. Briry, special examiner of drugs at the port of Boston and formerly one of the Massachusetts Commissioners of Pharmacy. Mr. Briry spoke of the work carried on at his office.

Brief remarks were made by Dean T. J. Bradley and C. O. Ewing.

Following the meeting a buffet luncheon was served in the Alumni room of the college.

LESLIE B. BARRETT, *Secretary*.

NORTHERN OHIO.

The January meeting of the Northern Ohio Branch of the American Pharmaceutical Association was called to order by President Otto E. Muhlhan at the Hotel Statler, after a well-served dinner.

The minutes of the preceding meeting were read and approved. The treasurer's report was read and ordered filed. L. C. Hopp was elected honorary chairman of the A. Ph. A. Convention.

The report of the Nominating Committee was received, and read as follows: *President*, E. R. Selzer; *Vice-President*, J. Bauer; *Secretary-Treasurer*, F. Cermak.

It was moved, seconded and carried that the secretary cast the ballot electing the candidates as presented by the Nominating Committee.

The newly elected president then took the chair.

WALTER F. HAGEMEISTER, *Secretary*.

INTERSECTION EUCLID AVE. AND EAST 9TH ST., CLEVELAND, OHIO.

The intersection of Euclid Avenue and East 9th Street is the busiest corner in Cleveland. For twenty-two blocks the retail mercantile section of Euclid Avenue stretches unbroken, filled with shoppers from building to curb.

The American Pharmaceutical Association, American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy meet in Cleveland during the week of August 14, 1922.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

A SYMPOSIUM ON METHODS OF TEACHING COMPOUNDING IN THE CONFERENCE SCHOOLS (*concluded*).

[EDITOR'S NOTE.—The Symposium on Dispensing and Prescription Practice is concluded with the March issue. The Chairman will, however, be glad to receive helpful suggestions at any time for publication in the JOURNAL. In the April number we hope to publish a number of articles from men in authority upon the subject, "The College of Pharmacy Library, What It Should Contain and How It Can Be Used." RUFUS A. LYMAN, Chairman and Conference Editor.]

UNIVERSITY OF IOWA.

In a booklet entitled "Medical Hospital Rules of the State University of Iowa" we find the following:

"The Hospital Pharmacy Department shall use all the products possible of the Pharmacy Department of the University, and the same shall be stocked up and be under the general care of the Dean of that Department or of some person suggested by him to the Committees and Superintendent."

The above was adopted on June 10, 1897, by the Board of Regents upon the recommendation of the Medical Department Committee.

In accordance with this resolution, the preparations made by the senior students in the Pharmacy College were used, as far as possible, in the hospital work but the dispensing of the same was in charge of the resident physician.

In 1905, the Board of Regents, by resolution, put the entire charge of the Hospital Dispensary under the control of the Dean of the College of Pharmacy.

The buying and dispensing of all drugs since the above date has been carried out and the service expanded until the Pharmacy College can now be truly stated to be a service college of the university. All drugs or chemicals used in any department of the university, exclusive of the department of chemistry, are secured through the College of Pharmacy. These departments are Botany, Zoölogy, Engineering, Dental, Home Economics, University Store House, Physics, Museum, Psychology, Child Welfare Station, Athletic, Pharmacology and Pathology.

All the reagents, percentage solutions, stains, etc., used in the various laboratories are prepared in the College of Pharmacy, and for an institution of some 6000 students, this is no small matter.

The College of Pharmacy has so conducted this work of service along all lines pharmaceutical, that it is now considered indispensable, and, incidentally, is saving many thousands of dollars to the institution.

The hospital work, as far as the student is concerned, is, of course, the most important and includes the University General Hospital, the Children's Hospital, Urology Hospital, Psycopathic Hospital and the Student Health Out Clinic. The total number of beds at the various hospitals is upwards of 625.

The dispensing at the University Hospital is in charge of a registered pharmacist on full time, C. C. Hazard, and the dispensing at the Children's Hospital,

under a registered pharmacist, E. A. Nixon, on part time. The senior class is divided into sections of twos and they are on duty from 10 to 12 each day including Sunday. The work is done under careful supervision and checked at every point to avoid mistakes. During the 17 years, no mistake has been made to our knowledge, but we never make this statement without knocking on wood. At least, it is a record we feel sure is not equalled by many pharmacies handling the same amount of material that we do. The statistical record for the past six months is as follows:

Month.	Prescriptions.
July	3111
August	3246
September	3866
October	4290
November	3530
December	3656
Total for six months	21699

The didactic work in prescriptions is given in the senior year and is done with the use of a stereopticon lantern and several hundred actual prescriptions are thrown on the screen for study. This work is under Prof. R. A. Kuever. The laboratory work is taken up illustrating the different kinds of incompatibilities using Scoville's "Art of Dispensing" as a text and is under Prof. Zada M. Cooper.

Our graduates are qualified to take charge of the prescription work in any pharmacy and have had more and better experience than they would receive in the majority of pharmacies throughout the country in two or three years' time.

The main dispensary at the University Hospital is equipped with every convenience possible for service. The shelfware is all amber glass with recessed label, all table tops are alberene, the refrigerator large enough to take care of all biologicals, ointments and suppositories and is cooled directly from the refrigeration plant. The furniture was made by the Saginaw Furniture Company and, at the time of installation some ten years ago, was supposed to be the last word.

WILBER J. TEETERS, *Dean.*

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UNIVERSITY OF MICHIGAN.

In the matter of practical experience in filling and dispensing prescriptions, there is a growing tendency on the part of many state boards to grant liberal credit to applicants who are graduates of colleges that require more than the usual amount of laboratory work in this branch. At Michigan there has been a gradual evolution in the teaching of prescription filling and incompatibility, and I am glad to say that this evolution has never been in the form of a revolution and hence is constantly being worked out along lines that are leading to the utmost good of all concerned. The lecture and quiz periods deal with methods of filling compatible and incompatible prescriptions, aiming to acquaint the student with information that will engender confidence, accuracy, neatness and speed as well as the commercial knowledge necessary in figuring costs and selling prices.

The laboratory work is divided into three separate and distinct divisions. The first division of the work is performed in the regular prescription laboratory, the second division in the Health Service Pharmacy, and the third in the pharmacy of the University Hospital. The student is at all times amenable to his instructor in the course even though he may be employed in the Health Service Pharmacy or in the Hospital Pharmacy. A record is kept of the time spent in both of these institutions and credit granted according to his proficiency.

In the prescription laboratory each student is required to fill a minimum of 100 prescriptions including many that are either chemically or physically incompatible. Practice in prescription reading and writing and in checking doses is also included.

Students who have had drug store experience are selected in the first groups for work in the Health Service Pharmacy, the less experienced being retained in the prescription laboratory until later in the year. After two or three weeks in the Health Service Pharmacy the students are transferred to the Hospital Pharmacy for a similar period of from two to three weeks. From the beginning of his career in this work until he has completed the course, the student works under the supervision of registered pharmacists, meeting during the course of time with three such registered men.

The Health Service of the university was established eight years ago but on account of the small prescription laboratory with which it was originally provided, only a few of the students were privileged to gain the experience that is now extended to all who are enrolled. About a year ago, modern fixtures for the pharmacy were installed in a first-floor, well-lighted room. The location is convenient to the offices of the five Health Service physicians, and therefore patronized freely by the ten thousand students enrolled in the university. No prescriptions are brought to this pharmacy by patients confined to the hospital. All hospital prescriptions for student in-patients and for other hospital patients both in and out, are sent to the Hospital Pharmacy.

In the Health Service Pharmacy of the university approximately 12,000 prescriptions are filled during the college year, the peak number for any one day of four hours being ninety-three, the pharmacy being open from 10 to 12 A.M. and 3 to 5 P.M. daily except Saturday afternoon and Sunday. At the University Hospital about 40,000 prescriptions are filled per year, and daily average of new prescriptions totaling about fifty and refills about seventy-five. There are no refills in the Health Service Pharmacy as new prescriptions are issued by the physicians for all calls.

On account of the plan we are following, the Michigan Board of Pharmacy is very liberal in granting credit for practical experience gained by students who graduate from the university. Many colleges are not so fortunately supplemented by Health Service Pharmacies or even hospitals, but where such opportunities are at hand, it would seem only reasonable to suppose that pharmacy boards would be as willing to grant credit for this type of work as for time spent in a store.

CHARLES H. STOCKING.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Conducted by H. V. Arny, Reporter on the Progress of Pharmacy, Chairman of the Committee on Research.

On these pages, each month, will be found a list of articles on pharmaceutical research; the list appearing a certain month will record articles appearing in American journals of the preceding month and articles appearing in foreign journals will be recorded as quickly as possible after the journals reach the Reporter.

All articles appearing in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK which will be issued as soon after the end of the year represented as editing and printing conditions permit. Those desiring abstracts immediately can obtain same for a fee of one dollar each by communicating with H. V. Arny, 115 West 68th St., New York, and arrangements can also be made for securing photographic reproductions of entire articles at moderate prices when such are desired.

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Pharm. J., 108 (Jan. 28, 1922), 62
Kraemer, H.
Salt in headache
Drug. Circ., 66 (Feb. 1922), 48
Kraus, E. J.
Volumetric assay of aluminum
Chem. Ztg.; through *Pharm. J.*, 108 (Jan. 7, 1922), 8
Milian
Arsenical conjunctivitis
Paris Med.; through *Pharm. J.*, 108 (Jan. 1, 1922), 25
Minor, C. L.
Calcium chloride in tuberculosis
Am. Drug., 70 (Jan. 1922), 34
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Sodium tungstate in fire-proofing solutions
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Spence, A.
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Thomas, P., and Carpentier, G.
A sensitive copper test
Comptes rend.; through *J. Soc. Chem. Ind.*, 41 (Jan. 16, 1922), 37A

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Potassium pyroantimoniate
Chem. Weekbl.; through *Am. Drug.*, 70 (Jan. 1922), 21

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Pharmacology of cinchona alkaloids
Lancet; through *Pharm. J.*, 108 (Jan. 28, 1922), 67

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Aromatic grass oils
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Benzyl succinate
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Constitution of diamylose
Helv. Chim. Acta; through *Pharm. Zent.*, 63 (Jan. 12, 1922), 34

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Rupe, Seibarth and Kussmaul
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(Abstract)

WASHINGTON, D. C., February 3, 1922.

To the Members of the Council:

45. Budget of appropriations for 1922—Approved. Motion No. 39.

46. Plan of procedure for Committee on A. Ph. A. Permanent Home (Item No. 41). The motion to approve the plan submitted by Prof. Beal has received 3 negative votes. The vote will, therefore, be considered tentative and the whole matter is now before you for discussion.

Prof. R. A. Lyman of Nebraska submits the following comment with his vote:

"I am in favor of Motion No. 41, excepting Section No. 5. I see no good reason why the location for the permanent home should not be decided upon before the funds are raised. I am sure it would give an impetus to the contribution of funds if the location were decided upon at once."

47. Distribution of copies of 1919 Year Book to members who joined after July 1, 1921. Motion No. 43—Carried.

49. Auditor's report on Treasurer's Office. Jeff K. Stone & Company, St. Louis, Mo., submit the following report on the Treasurer's office:

January 26, 1922.

"We have examined the Books and Records of the American Pharmaceutical Association, in the Office of the Treasurer, for its fiscal year ended December 31, 1921, and we found that all recorded Cash Receipts were accounted for through Bank Deposits and all Cash Disbursements were evidenced by properly signed checks on file.

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posit Vaults and found to be in order. Report of the Treasurer as to its correctness is attached thereto."

(Signed) Jeff K. Stone and Company,
Certified Public Accountants,
Missouri.

50. Election of active members. No. 150, John Tumas, 1206 W. 14th St., Chicago, Ill.; No. 151, Russell Damon Levy, 3634 So. Michigan Ave., Chicago, Ill.; No. 152, Lester M. Stern, 833 S. Winchester Ave., Chicago, Ill.; No. 153, George Lewis Sontag, Neillsville, Clark Co., Wis.; No. 154, John N. Neher, 225 N. Barstow St., Eau Claire, Wis.; No. 155, Otto E. Rydell, 528 Tower Ave., Superior, Wis.; No. 156, R. C. Cameron, 712 E. 152 St., Cleveland, Ohio; No. 157, Norma A. Robbins, Redfield, So. Dak.; No. 158, Jennie Robbins, 432 S. Lincoln St., Chicago, Ill.; No. 159, Lewis Sing Quong, 1515 W. Monroe St., Chicago, Ill.; No. 160, Philip Mendelsohn, 1507 So. Homan Ave., Chicago, Ill.; No. 161, Geo. F. Strelow, Long Pine, Nebr.; No. 162, Eugene G. Morris, 535 N. Carey St., Baltimore, Md.; No. 163, Chas. C. Orr, 6927 Normal Blvd., Chicago, Ill.; No. 164, Jesse Bower Griffith, 3709 5th Ave., Chicago, Ill.; No. 165, Joseph D. Salem, 2535 W. 59th St., Chicago, Ill.; No. 166, Nicolas D. Stoyanoff, 6618 W. 12 St., Oak Park, Ill.; No. 167, Zusya Kagan, 39 Deering Road, Mattapan, Mass.; No. 168, Oscar B. Stevens, 315 Main Street, Matawan, N. J.; No. 169, William Joseph Kitzer, 102 Lowell Ave., Jamaica, N. Y.; No. 170, Thomas W. Prach, Jr., 759 South 15th St., Newark, N. J.; No. 171, Daniel Hoffner, 20 East 100 St., New York, N. Y.; No. 172, Theodore E. Caruso, 635 Greenwich St., New York, N. Y.; No. 173, William Taylor, 2355 Valentine Ave., New York, N. Y.; No. 174, Emil Fennell, 438 East 142 St., Bronx, N. Y.; No. 175, Philip Muller, 91 East End Ave., New York, N. Y.; No. 176, William M. Rhenieck, 1039 3d St., Milwaukee, Wis.; No. 177, Edwin Carl Knorr, 3383 14th Ave., Detroit, Mich.; No. 178, Charles Hiram Newman, 30 Acorn St., Muskegon, Mich.; No. 179, Herman Ludwig Emmerich, 834 Downer Ave., Milwaukee, Wis.; No. 180, Fred I. Schwartz, 1813 S. Spaulding Ave., Chicago, Ill.; No. 181, Frederick G. Weed, 278 E. Canfield St., Detroit, Mich.; No. 182, Earl Edward Rose, 5775 Cooper Ave., Detroit, Mich.; No. 183, William Joseph Conery, Lonoke, Ark.; No. 184, Charles C. Tomsik, 256 North Main St., Sheridan, Wyoming. A. G. DuMez, *Secretary.*

A. PH. A. COUNCIL LETTER NO. 9.

WASHINGTON, D. C., February 15, 1922.

To the Members of the Council:

51. Plan of procedure for Committee on A. Ph. A. Headquarters Building (See Items Nos. 41 and 46). The following comments on the plan of procedure for obtaining funds for a permanent headquarters for the Association as submitted by Chairman Beal of the Committee on A. Ph. A. Headquarters Building have been received:

From Prof. Rudd.—"Referring to Item No. 41, I too voted against Section No. 5. It seems to me that this section should be left out entirely, as it has no direct bearing on the whole question except to delay a matter which I feel should have prompt attention at the hands of the Council."

From Secretary Day.—"Commenting upon the plan of procedure for the committee on A. Ph. A. Home, Item No. 41, Council Letter No. 8, I believe that the Association has been very fortunate in securing for Chairman of this most important committee, Professor James H. Beal. I know that Professor Beal has given a great deal of time and thought to this matter and I am firmly of the opinion that he should be given a free hand in the selection of a plan whereby this fund may be raised. It is true that there are certain advantages, especially the appeal to local pride, in selecting the place for the home prior to raising the fund but, on the other hand, there are several strong objections.

"The chief objection I see to designating a place where the home shall be located is that we are still much in doubt as to how large a fund can be raised, and the use that we can make of the headquarters will depend largely on this. Again, the Association should not bind itself to any locality or city for we do not know what developments may arise that may make it very advantageous to locate elsewhere. For example, we may have an excellent site offered to us in some city—an offer that we cannot now foresee. It is possible that we may even have a building offered for the purpose.

"I believe that Professor Beal is right in his outline of tentative procedure and that we should first of all determine how deeply the members of the Association are interested and how much they are willing to contribute. Then we may approach those outside of the Association with better chances of success.

"I think it would be a great mistake if we now launch into a discussion of where the home should be located—a discussion that may prove quite fruitless and is sure to be long drawn out, with a resultant loss of valuable time. Let us give the Committee a chance to show what it can do."

From Prof. Beal.—"The decision of the Committee to raise funds for the A. Ph. A. Headquarters Building that the question of location should be deferred until a sufficient sum had been collected to erect such a building was taken after due consideration and deliberation.

"The Committee would be much embarrassed by the overruling of this decision, and it is hoped that the Council will therefore sustain this portion of the Committee's recommendation."

As ample opportunity has been given to permit those desiring to do so to discuss these plans, a vote is now called for.

52. Applicants Nos. 150 to 184 elected to active membership.

53. Request that $200 be appropriated for office supplies for the Committee on A. Ph. A. Headquarters Building. It is moved by Secretary Day, seconded by DuMez, that the sum of $200 be appropriated for printing, stationery and postage for the Committee on A. Ph. A. Headquarters Building. In presenting this motion Secretary Day writes as follows:

"Prof. James H. Beal, Chairman of the Committee on Permanent Home, writes that his committee will need official stationery, subscription blanks and possibly something in the shape of printed circulars. The Committee also will have a considerable bill for postage. He has asked me to submit to the Finance Committee and the Council a motion appropriating the sum of two hundred dollars or so much thereof as may be necessary for the work of the committee."

This motion has the approval of the Committee on Finance, and is being submitted for a vote at this time. If any adverse discussion should develop, the vote will be considered tentative.

54. Motion to give Treasurer Kelly the right of access to and control of the contents of the safety deposit vault of the A. Ph. A. Under date of February 11, 1922, Secretary Day writes that the National Exchange Bank of Baltimore has requested Treasurer Kelly to secure a properly executed certificate of the following form:

"Re:————————Safe No.———

The National Exchange Bank of Baltimore
Baltimore, Md.
Safe Deposit Department.

This is to certify that at a meeting of the Board of———of the————————— held at————————, on the————day of————, 19——, the following resolution was adopted.

Resolved, that————————————— shall have the right of access to and control of the contents of the Safe No.——in the vaults of the National Exchange Bank of Baltimore (Maryland) standing in the name of————.

This is to further certify that the following are the officers of this————, referred to in the aforegoing resolution, whose signatures are:————————————.

As changes in the officers authorized to have access to the safe occur, you will be duly advised.

Witness our signature and the seal of the corporation this————, 19——."

Secretary Day, therefore, offers the following motion, seconded by DuMez:

"*Resolved* that E. F. Kelly, Treasurer of the American Pharmaceutical Association, shall have the right of access and control of contents of Safe No. 869 in the vaults of the National Exchange Bank of Baltimore, Maryland, standing in the name of the American Pharmaceuutical Association."

55. Call for nominations for the Secretary of the Section on Historical Pharmacy. Secretary Day reports that our fellow member, Prof. A. W. Linton, died Thursday, January 26th, at Seattle. Prof. Linton was Secretary of the Section on Historical Pharmacy and his death leaves a vacancy in that office. Nominations to fill this vacancy are, therefore, in order.

56. Election of active members. No. 184, Charles C. Tomsik, 256 North Main St., Sheridan, Wyoming; No. 185, Victor E. Jones, c/o U. S. P. H. S., Colfax, Iowa; No. 186, William E. Smith, 1557 Woodward St., Detroit, Mich.; No. 187, James S. DeLaurier, 184 Grand Ave., West, Highland Park, Mich.; No. 188, C. Burrill Suminsby, 1557 Woodward Ave., Detroit, Mich.; No. 189, Wilfred Earle, 13 Lake St., Hopedale, Mass.; No. 190, J. Harold Anguish, 1557 Woodward Ave., Detroit, Mich.; No. 191, George Curtiss Slack, 524 Erie Ave., Renovo, Pa.; No. 192, Ray Harris Case, 301 Huron Ave., Renovo, Pa.; No. 193, Emil Carl Petersilge, 2134 Woodland Ave., Cleveland, Ohio.

A. G. DuMez, *Secretary.*

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* J. H. BEAL, IVOR GRIFFITH, R. A. LYMAN, H. B. MASON, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: S. L. HILTON, President, A. Ph. A.; C. A. DYE, President, A. C. P. F.; L. L. WALTON, President, N. A. B. P.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; CHARLES H. LAWALL, Chairman, Council A. Ph. A. The Chairmen of the Sections, A. Ph. A.: HEBER W. YOUNGKEN, IVOR GRIFFITH, W. H. ZIEGLER, C. W. HOLZHAUER, CURT P. WIMMER; E. F. KELLY and JEANNOT HOSTMANN of the House of Delegates; A. G. DUMEZ, Secretary of the Council, WILLIAM B. DAY, General Secretary, and H. V. ARNY, Reporter on the Progress of Pharmacy.

ANTHRAX.

Quite a number of cases of anthrax have been traced to shaving brushes and, recently, several cases have occurred from a more frequent source, namely, the handling of skins and hides. Dr. C. Lincoln Furbush, Director of Public Health of the City of Philadelphia, communicated an article on the subject to the *Philadelphia Ledger,* from which the substance of the following is taken.

"Anthrax is an infectious disease and is produced by the anthrax bacillus. It is interesting to note that this disease is believed to be the first to be looked upon as definitely infectious and the first bacterial disease to be discovered and proved to be due to a microörganism. In this respect, at least, its history is unique.

"It is essentially a disease of animals, and in certain countries of Asia, in Russia, Germany, France, the Balkan States and England, it is far more common than in the United States. In the first mentioned of these countries its ravages are wide-spread, at times appearing in epidemic form. Owing to its infectious nature, hides from animals which have died of anthrax are potential sources of danger to man unless the greatest care is taken in the preparation of them for the market.

"Human beings contract anthrax from animals which have had the disease. Usually this infection takes place among those who have had direct or indirect contact with the diseased animals or with material from these animals which is used in commerce.

"Most of the cases of anthrax which occur in human beings are, therefore, among butchers, hostlers, tanners and those who handle the hair or wool from animals which have had the disease. Occasionally, however, the bacillus remains alive through all the processes of preparation for the market and some purchaser of a product will contract anthrax from the bacillus which lives, all unsuspected, on an implement perhaps in daily use.

"The anthrax bacillus is one of the largest in size of any of the disease-producing bacteria, and it is further characterized by being what is known as a 'spore producer.' By this is meant that when conditions for its continued growth are not favorable it develops a body or 'spore' of high powers of resistance. This 'spore' can remain for an indefinite period in a quiescent state, and when conditions again become favorable will return to growth and its infectious nature.

"It is this peculiar quality of the anthrax bacillus which has led to human infection here in the last year or two. The malignant germ remains in a seemingly innocuous condition until suddenly it resumes its powers for evil, and then if there be an abrasion of the skin into which it can enter the disease is contracted.

"In man, two kinds of anthrax occur. The usual form is known as an anthrax carbuncle, and is a malignant pustule, commonly found on the hands, arm or face. This starts as a small reddened surface, which rapidly becomes localized, and this area soon shows a blister, the base of which rapidly becomes hardened. Within thirty-six hours the center becomes brownish and incrusted, with small blisters around it, and the surrounding surface is hot and swollen.

"Fever is absent in most of these cases, but in some there is an increase in temperature, with characteristic symptoms. In the latter case, if prompt treatment is not instituted, death will result. But in the great majority of cases of this type the disease remains localized and recovery is to be expected if proper and prompt treatment is given.

"In the second type of anthrax in human beings the disease does not tend to localize, but spreads through the system at once and a fatal termination is usually the result."

SOUTHERN HOLLY LEAVES FOR A CAFFEINE BEVERAGE.

The use of a decoction *Ilex cassine* is not new, having been employed by the Indians and, to some extent, by others of the section in which the shrub grows. Several years ago Dr. Frederick B. Power and Victor K. Chesnut determined the caffeine content of *Ilex vomitoria* to be as high as 1.67 percent (see Year Book A. Ph. A., vol. 8, p. 509). George F. Mitchell, tea specialist of the Federal Government, has worked out methods for curing the leaves, the purpose being to encourage their use for making a table beverage, replacing tea. The leaves are put through a fermentation process and then dried at about 110° C., the methods seen to be based on those employed in preparing tea leaves for the market. The beverage made from cassina is said to be palatable and to possess the stimulating properties of tea.

COD LIVER OIL FOR RICKETS.

Dr. E. A. Park and Dr. John Howland of the Johns Hopkins Hospital staff have made the statement, according to press reports, that cod liver oil brings about a change in the bones of the patient under treatment, which, if the diet is not too faulty, amounts to a complete cure. The studies have comprised in all some fifty cases, and the results have been uniformly consistent. "The change is not noticeable at once but is readily demonstrable in almost all cases by the end of a month. In two or three months so much infiltration of salts has taken place that the extremities of the bones, except for deformities, are practically normal."

WHY "OILS" OF CADE?

The above question serves as the title of a paper by Dr. Camille Pepin, Paris, in *Ungerer's Bulletin* for January. He states that under the name of "oil of cade," there are three different products on the market in this country—technical, U. S. P. VIII, and U. S. P. IX. In France there are two—veterinary, and true oil. The former probably corresponds to the "technical," while in the oils of U. S. P. VIII and U. S. P. IX, the definition of the latter is more complete and in accord with true oil of cade, obtained in the proper manner from the wood of *Juniperus oxycedrus*. In Dr. Pepin's opinion the logic of the situation requires:

"First, that technical oil of cade should cease to bear the designation, cade, to which it has no right, and take the vague title of empyreumatic oil.

"Second, that the appellation, oil of cade U. S. P. VIII, be dispensed with in commercial usage since the product designated by it might be confounded with the true oil of cade as defined in the ninth revision and bears the name to which it has no claim unless it coincides with the latter product.

"Third, that the designation oil of cade be reserved exclusively for application to products which are extracted from the *Juniperus Oxycedrus* and correspond to the requirements of the U. S. P. IX."

OIL OF SASSAFRAS.

R. M. Dudley, writing in *Ungerer's Bulletin* for January, gives an account of the oil of sassafras industry, its history, the methods employed in distillation, etc. The total annual American production averages about 85,000 pounds annually.

"The natural oil is yellow to reddish brown, according to the character of the root employed and the form of still used. Since there is no corresponding difference in quality no effort is made to keep the different varieties of root separate. The U. S. Pharmacopoeia recognizes the yellow to reddish yellow color as official.

"Authorities differ as to the correct specific gravity. Proctor states that it varies from 1.087 to 1.094, increasing somewhat with age, while the U. S. P. requires that the official oil have a somewhat lower specific gravity, from 1.065 to 1.075. Since the specific gravity of the principal constituent, safrol, is given as 1.11 and those of the other important ones are lower it would seem that the higher specific gravity would imply a greater percentage of safrol in the oil.

"The optical rotation, according to the U. S. P., should be +3° to +4° and all oil sold with the U. S. P. label must conform to this standard. High grade Oil Sassafras, however, has a lower degree of rotation, usually slightly more than two degrees, which agrees with results obtained by Schimmel and Company who found the correct figure to be +2.14°. The main constituent, safrol, is inactive as are the pinene and phellandrene which are also stated to be present. The plus rotation must therefore be due to other minor constitu-

ents and, if exceptionally high, to adulteration, usually with oil of camphor.

"A pure, high quality Oil Sassafras should have a specific gravity of close to 1.070 at 25° C. and a plus optical rotation of slightly above 2°."

ITALIAN OLIVE OIL PRODUCTION.

The season in Italy has been favorable for the gathering of olives. The yield in 1921 is estimated at 22,046,300 pounds, as compared with 26,896,500 in 1920 and an average of 26,482,500 for the last five years. The yield in oil is estimated at 3,747,900 pounds, against 3,769,900 in 1920 and an average of 3,863,000 for the previous five years. The olive crop is 82 percent that of 1920, while the olive oil production is practically the same.

INTERESTING SUBSTITUTES FOR FOOD PRODUCTS.

Dr. Arno Viehoever contributed an interesting article on above subject to *The American Food Journal*. *Zamia flondaua* is one of the products considered; tepary beans, until recently largely grown in California, is another. The yield of latter is stated to be up to 4,000 pounds per acre; the plant is closely related to the common bean and also Lima bean; the author points out that probably the use of them has not grown on account of a somewhat bitter taste of the bean. *Solanum macrocarpum* is mentioned as a possible substitute for tomatoes, and is used by the natives of Madagascar. The importance of cassina for making a table beverage is discussed. Spanish thyme has recently been imported; the flavor differs from that of *Thymus vulgaris*, and it is not definitely known whether the former contains thymol. Two new substitutes for cubebs have appeared on the market, *Piper ribesoides* and *P. cubeba*, var. *rinoe badak;* the latter is considered poisonous; cubebin, the author states, is evidently absent in both of the substitutes. *Jeffersonia diphylla* is in several respects very similar to hydrates, but contains no hydrastine. The article is illustrated.

THE OPPORTUNITIES OF THE LABORATORY.

A most interesting and comprehensive contribution by Dr. Henry Kraemer appears in the February *American Druggist* on above subject. The author states that one of the greatest needs in every community is a laboratory properly conducted and operated upon a high professional basis by a pharmacist. "No one can conduct a laboratory," he states, "unless he has the research spirit and an unselfish desire to help everyone who is in the dark, whether it be the physician, the patient, district attorney, or the individual who wishes some light on some particular problem.

"To be a financial success it must be an all around laboratory and equipped in such a way that a great diversity of work can be done."

Dr. Kraemer states that the work done in the laboratory advertises it, and cites examples of coöperation with physicians, officials and laymen. Methods of urine analyses, blood examination, examination of exudates, are given. References are made to laboratory workers. He concludes by saying that there are three essentials in the making of a laboratory man—the possession of good eyes, he must be intellectually honest, and he needs moral strength.

WHY DOCTORS ARE SCARCE IN RURAL PENNSYLVANIA.

A committee of the County Medical Society, composed of David Riesman, chairman, professor clinical medicine, University of Pennsylvania School of Medicine; Thomas McCrae, professor practical medicine, Jefferson Medical College; William Pepper, dean, University of Pennsylvania School of Medicine; and John H. Gibbon, professor surgery, Jefferson Medical College, reports that, not including Philadelphia and Pittsburgh, there is in the state one physician for every 947 inhabitants. Some of the reasons assigned for the scarcity are as follows:

"(*a*) The reduction in the number of medical schools throughout the country.

"(*b*) The war.

"(*c*) Limitation in the number of students accepted by the best medical schools.

"(*d*) The long time required to obtain a medical education and the license to practice.

"(*e*) A special reason for the scarcity of doctors in rural communities is that capable men are deterred from settling in country districts because of the lack of proper hospital facilities.

"The small cities and towns and villages are greatly in need of physicians. The lack of trained medical men has led to the influx of quacks and irregular practitioners."

The committee recommended to the society the following to meet the conditions:

"First. It is desirable to increase the number of students admitted to medical schools.

"Second. Extra-urban practice should be made more valuable and more attractive by erecting modern hospitals throughout the state, placing them with due regard to the needs of the communities.

"Third. Colleges, as well as primary and secondary education, should be speeded up so that men and women may be able to enter medical schools at an earlier age."

The *Journal of the American Medical Association* comments: "The saving of one or two years of time in intermediate and secondary education, as recommended in the Pennsylvania report, is indeed desirable; but that reform would have no effect whatever in supplying doctors for rural communities. It is quite clear that the only way by which physicians can be induced to locate in rural districts is to make those districts more attractive places in which to live, from the professional, social and economic points of view."

BRITISH PHARMACOPOEIA SALES.

According to the report of the Pharmacopoeia Committee of the General Medical Council, given in a recent issue of the *Pharmaceutical Journal* (London), 1,427 copies of the British Pharmacopoeia, 1914, were sold by the publishers between May 21 and November 19, 1921. The number sold in the year ending November 19, 1921, was 2,407, the total number sold since the date of publication being 41,385. It is also noted that the Council has given permission for the British Pharmacopoeia to be translated into Chinese.

THE METRIC SYSTEM.

Senator E. F. Ladd, in an article contributed to the *New York Commercial*, states that the question of the adoption of the metric system of weights and measures "is no longer circumscribed by the boundaries of our own country. It is a world question. There are now about 40 countries that have adopted the metric system as the sole legal standard. If we intend to carry on commerce with the rest of the world we will have to conform with their commercial requirements. Practically all the presidents of the foreign delegations to the conference on the limitation of armament have expressed their keen interest in the possibility of the United States soon adopting the metric system.

"Now that there is so much interest aroused in the metric question it behooves all those who have the cause at heart to lend a helping hand until the American people are freed from the bondage of an archaic system of weights and measures."

PERSONAL AND NEWS ITEMS.

Crippled by neuritis in the wilds of South America, DR. HENRY H. RUSBY, ex-president of American Pharmaceutical Association, has been compelled to abandon the leadership of the Mulford biological exploration of the Amazon Basin. Dr. Rusby, after struggling for months against this malady, his discomforts being increased by an infected tooth, according to an announcement at Columbia University, February 15, set out alone from the Bolivian fastnesses on a hazardous journey of 1,600 miles for a Brazilian port, whence he will embark for New York, where he should arrive about March 1; he arrived at Manaos, Brazil, January 9.

The duties of the director of the expedition were turned over to Dr. W. M. Mann, an entomologist of note and Assistant Curator in the Division of Insects of the United States National Museum. Under the direction of Dr. Mann, who has had wide experience in tropical travel and as a collector, Dr. Rusby's party is continuing its work in Bolivia and western Brazil, making studies and collections in the valleys of the Rio Beni and some of its tributaries, including the Rio Negro and Rio Ivon.

Plans for the trip into Colombia have been modified and the explorers will work in Bolivia and Brazil until April. The botanical work of the expedition is being continued by Dr. O. E. White, a representative of the Brooklyn Botanical Gardens and Harvard University, assisted by Señor Cardenas, a young Bolivian botanist who became a member of the party as a result of a request made by the Bolivian Department of Agriculture.

Despite the changes in plans and the unexpected termination of Dr. Rusby's active leadership, the sponsors of the expedition, it was said, feel that important contributions to botanical and medicinal science will result. More than 3,000 plant numbers have been collected and many more will be added. The explorers have already shipped to this country many boxes containing specimens of economic importance.

Educational and scientific circles in South America are said to be viewing the work of the expedition with favor. One Peruvian newspaper, describing Dr. Rusby and his researches, refers to his exploits as "the gallantry of a man of science."

Henry M. Whelpley, retiring treasurer of the A. Ph. A., after serving two years as vice-president of the St. Louis Anthropological Society, has been elected president of that association.

Dr. Edgar Fahs Smith is the Chandler lecturer for 1922. The lecture was delivered March 2 at Columbia University on the subject, "Samuel Latham Mitchill—a Father in American Chemistry." The foundation of the Chandler lectures was established in 1910, and a medal is presented annually to each lecturer in further recognition of his achievements in science. (See JOUR. A. PH. A., March 1917, p. 228.)

Samuel Latham Mitchill was the first professor of chemistry at Columbia University and the first senator from the state of New York. He was born at North Hempstead, N. Y., August 20, 1764, and died in New York City, September 7, 1831. He founded, with Dr. Edward Miller and Dr. Elihu H. Smith, the "New York Medical Repository," and was its chief editor. Prof. Charles F. Chandler is a life member of the American Pharmaceutical Association.

Prof. Frank X. Moerk delivered the ninth of the series in the public lecture course at the Philadelphia College of Pharmacy and Science on the subject "How Chemistry Develops the Industries."

Dr. Charles E. Caspari delivered an address on "The Science of Chemistry" before the Academy of Science, St. Louis, February 20.

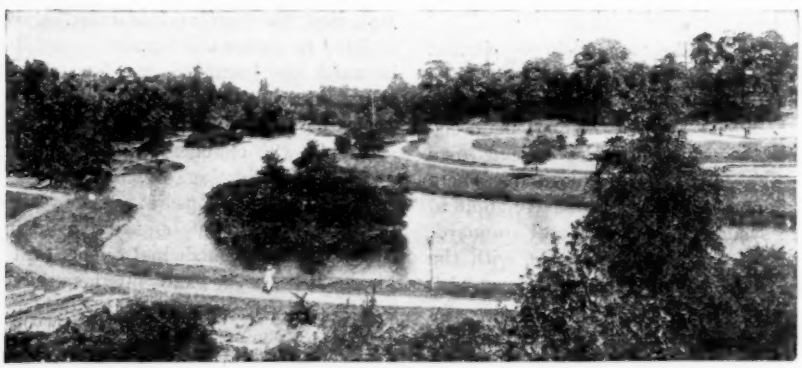
Prof. Anton Hogstad, Brookings, S. D., spoke before South Dakota Academy of Science on "Drug Cultivation." He also presented a report on medicinal and poisonous plant investigations.

Prof. Henry Kraemer delivered an address on "Manufacturing for the Retail Pharmacist," at the South Dakota School of Pharmacy, February 20.

Saunders Norvel, New York, was one of the speakers at the meeting of Minnesota Pharmaceutical Association; his subject was "Quick Turn-over and the Relation It Has to the Present Day Drug Store."

Mr. Edward Morell Holmes, for fifty years curator of the Museum of the British Pharmaceutical Society, an honorary member of the American Pharmaceutical Association, was recently awarded damages (£1,000) for injuries sustained by being knocked down by an automobile, about a year ago. The injury necessitated the amputation of his left leg. Mr. Holmes is 79 years of age; he is well and favorably known to American pharmacists.

Simon N. Jones, Louisville, Ky., veteran member of the American Pharmaceutical Association, was run down by an automobile, February 6. In a letter of recent date Mr. Jones reports that he is recovering from the injuries sustained.



ROCKEFELLER PARK—CLEVELAND, OHIO—THE 1922 CONVENTION CITY.

Scene in Rockefeller Park, one of the natural parks in Cleveland. It combines boating and tennis with its beauty as a place to drive, walk or rest. It is part of the city's park and boulevard system extending around the city. Twenty parks with more than 44 miles of paved driveways and boulevards, comprising 2420 acres, make up this great system.

OBITUARY.

A. W. LINTON.

A loyal friend, an inspiring teacher, a kind and devoted husband and father has been lost in the passing of Prof. Arthur Wilson Linton from this life, January 26, 1922, at his home 5020 12th Avenue Northeast, Seattle, Washington. While conducting his final examinations for the work of the fall quarter of the University of Washington College of Pharmacy, he was stricken with typhoid fever, which resulted in his death six weeks later.

In his passing the American Pharmaceutical Association has lost one of its most loyal members and American pharmacy, especially that of the Pacific Coast, has lost one of its brightest minds.

Professor Linton was forty-three years of age, having been born in Bunker Hill, Illinois, May 1878. It was in this city that he received his early education and became interested in the profession of pharmacy, having been engaged in retail pharmacy from 1893 to 1901. He graduated from Highland Park College, Des Moines, Iowa, with the degree of Graduate in Pharmacy, in 1902. He then returned to retail pharmacy for the next few years and was located in Albion, Nebraska. In 1906 he went to the University of Michigan, entered the College of Pharmacy and was graduated with the degree of Bachelor of Science in 1909. While a student at this university he held the Frederick Stearns Fellowship and was an instructor during the summer session of 1909. He was professor of pharmacy at Valparaiso University in Indiana from 1909 to 1913. From this post he joined the University of Washington College of Pharmacy faculty in September 1913, as an associate professor, which position he held at the time of his death. Professor Linton took his Master of Science degree from the University of Washington in 1915 and was planning to go abroad in the near future to study for his doctorate.

PROF. A. W. LINTON.

His chief interest in the College of Pharmacy was in the teaching of prescriptions and he leaves an unfinished text he was writing on this subject. In addition to his teaching he was much interested in the growing of medicinal plants and in coöperation with the U. S. Bureau of Plant Industry he did much to develop this important department of the College of Pharmacy.

For several years Professor Linton had been serving the druggists of the North Pacific Coast states by assisting them in working out their prescription difficulties and in this capacity he conducted a page in the *Pacific Drug Review* each month entitled "Prescription Difficulties." He was also a member of the editorial staff of this publication.

Taking an active interest in all of the progressive movements in pharmacy, Professor Linton became a member of the Washington State Pharmaceutical Association. He served as secretary of the Association during the years 1915–1917 and proved a loyal and untiring worker. He was again elected to the same office in 1920 and was serving in this capacity at the time of his death. He found time to devote to the American Pharmaceutical Association and served on many of its important committees. At the time of his death he was secretary of the Historical Section and a member of the committee planning for a permanent home for the Association.

At the 1920 meeting of the American Pharmaceutical Association he presented a paper before the Section on Education and Legislation in which he gave facts showing that huge quantities of narcotics were being exported from this country to Japan, which were being either smuggled back into the United States or sent into China. As a result of his efforts members of the State De-

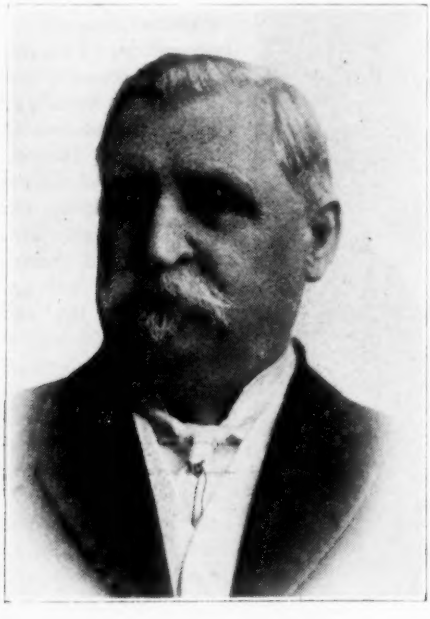
partment became interested, Congressman John F. Miller and Senator Wesley Jones of the state of Washington made a study of the question, and we now have before Congress the Jones-Miller Bill which if enacted into a law will restrict this exportation.

Professor Linton was a man of high ideals and Christian spirit and endeavored day by day by precept and example to lead his students to a realization of the importance of the profession of pharmacy as a power for good in the community. He took an active interest in the student organizations of his college and was a member of Kappa Psi fraternity and Sigma Xi. His death brings sadness to all who knew him; but his memory will live in the hearts of his associates.

C. W. JOHNSON.

OTTO A. WALL, M.D.*

The sudden death from heart failure, early in the morning of February 13, of Professor Otto Augustus Wall, of the St. Louis College



DR. O. A. WALL.

of Pharmacy, came as a surprise and distinct shock, as the news was communicated. His having taught in the school continuously for forty-nine years, without a serious spell of sickness, caused a feeling that the good doctor would continue on without interruption. He met his classes, as usual, on Friday, and retired for sleep, Sunday night, after making preparations for his Monday morning lecture. He was found in bed, lying in repose suggesting sleep, and life must have passed without a physical struggle.

Professor Wall was an educator in pharmacy for one-half of the centennial period of Missouri as a state. He was the only person to serve twice as president of the Missouri Pharmaceutical Association, having held that office during the fourth and fifth years of the organization. In earlier days, he was a regular contributor of papers at the annual meetings. He represented Missouri at the United States Pharmacopoeial conventions and presided over that body in 1910. He was the most widely known Missouri author of text and reference books of which he wrote several—"Pharmacognosy," "Prescription Writing," "Pharmaceutical Latin," "Sex Worship."

To his associates, he was known as a man of vast general knowledge, always ready and willing to give others the benefit of what he knew, without thought of financial reward. He had a legacy of an inborn love for study and was an exceptionally apt and popular teacher. He was an accomplished artist, his painting and crayon work received recognition, and his pen-and-ink sketches were excellent.

It was in his seventy-sixth year, after a long life of good health and opportunity of devoting his time to study and teaching which he enjoyed so much, that he suddenly ceased work as he frequently said he would and always desired to do.

For a number of years the deceased was associated with the late Prof. Oscar Oldberg, in the manufacture of pharmaceuticals.

The last paper contributed by him to the American Pharmaceutical Association was at the 1916 meeting, on "Vegetable Taxonomy." He joined the Association in 1884.

Dr. Wall is survived by his widow and two daughters, Mrs. Henrietta Stith and Miss Irene Wall.

CHARLES BASKERVILLE.

Dr. Charles Baskerville, director of the chemical laboratories of the College of the City of New York, died of pneumonia on Saturday, January 28, at his home in New York City. He was one of the best and most widely known members of the American chemical world, the author of a number of textbooks on different

* We are indebted to Dr. H. M. Whelpley for the data of this sketch.

phases of his subject, and had contributed largely to the scientific periodicals of the country. He had done extensive research in anesthetics and in the perfection of methods for the refining of vegetable oils.

Charles Baskerville was born in Noxubee county, Mississippi, June 18, 1870, and was a student of the university of that state during the years 1886 and 1887, and later attended the University of Virginia, where he was graduated in 1890. He attended Vanderbilt University in 1891. In 1893 he studied at the University of Berlin, and the next year he received the degree of Ph.D. from the University of North Carolina. He became connected with that university as instructor first in 1891, and later was assistant professor and professor of chemistry and director of the chemical laboratory.

His connection with the College of the City of New York began in 1904 when he was called to the chair of chemistry. He served as professor of chemistry and director of the laboratory until his death. He designed the large laboratories that are now used by that institution.

While Dr. Baskerville was not a member of the American Pharmaceutical Association, he was well and favorably known to the members and contributed to the program of several conventions.

CHARLES I. HOOD.

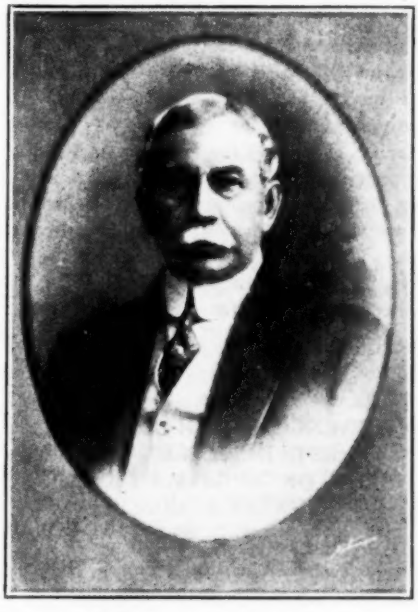
Charles I. Hood, Lowell, Mass., died February 5. He was born in Chelsea, Vt., in 1845, and in 1861 came to Lowell, securing a position as druggist clerk with Samuel Kidder. A little later he moved to Boston, where he spent five years more as prescription clerk in the establishment of Theodore Metcalf & Company. For six years thereafter he conducted the largest drug store of Lowell and then developed the proprietary medicines bearing his name. In late years he gave much attention to the breeding of fine stock.

Mr. Hood joined the American Pharmaceutical Association in 1871.

GEORGE ROBERT WHITE.

Mr. George Robert White, who presented its new building to the Massachusetts College of Pharmacy, died at his home in Boston on Friday, January 27. Mr. White was born in Lynn, Massachusetts, about seventy-five years ago and spent his boyhood in the small town of Acton, about thirty miles from Boston. His father volunteered in the Civil War and rose to the rank of captain, but was killed at New Orleans, leaving the sixteen-year-old son as the head of the family which included the mother and two sisters; a third sister had died in early childhood.

When he was seventeen years of age he went to Boston and secured a place as an office boy with the Weeks & Potter Company, a wholesale drug house. His advancement was rapid for at twenty-six he was taken into the firm. Later on this firm went out of existence after the Potter Drug & Chemical Corporation was organized with Warren B. Potter and George Robert White as its chief stockholders. This concern manufactures "Cuticura" and other proprietary articles. Upon Mr. Potter's death



GEORGE R. WHITE.

Mr. White became the controlling stockholder and president of the corporation and he retained this position until his death.

As Mr. White's income increased he laid the foundations of a great fortune, largely by investments on high-grade real estate in Boston. He made a careful study of the lines of development of the business section of the city and bought improved property which often increased in value to several times what it cost him. For several years he paid the largest individual tax in Boston, the assessed value of his city real estate having been more than four millions of dollars at his death.

Mr. White became interested in the building project of the Massachusetts College of Pharmacy in 1916, first pledging a contribution of

fifty thousand dollars to the building fund. His interest grew and, after suggesting many improvements for the building planned including many more artistic details, which greatly increased its cost, he presented the college with funds sufficient to pay for the construction of the building and to provide for its support. The amount of his gifts to the college was in excess of a million dollars.

Mr. White did not marry, but made his home with his surviving sister, Mrs. Frederick T. Bradbury, whose husband, now deceased, was closely associated with Mr. White in business. The close sympathy and affection between brother and sister was noteworthy and Mrs. Bradbury's counsel was sought by Mr. White in connection with his many affairs.

In his will, after various personal and public bequests, Mr. White left the residue of his fortune, estimated at seven millions of dollars or more, to the City of Boston, to form a permanent fund, the income of which is to be used for civic improvements along such lines as would not ordinarily be paid for by taxation. The fund is safeguarded in various ways and its administration by a board of trustees is provided for.

Unlike some self-made men, Mr. White was of unusually refined tastes with an appreciation of many forms of art and an especial interest in architecture. His personality is shown in the architecture and the art treasures found in his homes in Boston and at Manchester-by-the-Sea, also in many of the artistic details of the building of the Massachusetts College of Pharmacy. It was his delight to work out such details with the architects and designers and no amount of trouble was too much to take in order to get the best possible effects. It was a liberal education to observe the rare combination of good taste and good judgment he displayed in such work.

The beginning of Mr. White's fortune was made in connection with the drug business and it grew to large size because of the increasing value of business properties in Boston. It is evident that he wished to benefit these sources of his wealth in the gifts he made to the Massachusetts College of Pharmacy for pharmaceutical education and to Boston for the benefit of all of its citizens.

THEODORE J. BRADLEY.

SOCIETIES AND COLLEGES.

CONFERENCE OF PHARMACEUTICAL INTERESTS DISCUSSES THE QUESTION OF "SPECIALLY DENATURED" ALCOHOL.

At a conference of various branches of pharmacy held in Philadelphia February 24th, there were present members of the U. S. P. Revision Committee, of the Philadelphia Branch of American Pharmaceutical Association, the Philadelphia Association of Retail Druggists, Pennsylvania Pharmaceutical Association, American Pharmaceutical Manufacturers' Association, the Chemical Club, National Association of Retail Druggists, American Drug Manufacturers' Association, the County Medical Society, and the Philadelphia Drug Exchange. The conference discussed the subject of the issuance of regulations for the use of "specially denatured" alcohol in the manufacture of medicinal preparations for internal administration. The consensus of opinion was that such provision would be inadvisable. The reasons assigned were drafted to be submitted at a Conference on February 28th, in Washington.

(1) We believe that the use of tax-free alcohol for making internal medicinal preparations would be detrimental to the public health, because the selection of drugs and the processes of manufacture would come under the control of unskilled persons, while the discriminating pharmacist would have no incentive to improve the purity and potency of his preparations.

(2) The experience and standards of nearly a century in the manufacture of medicinal preparations would be seriously jeopardized by the destruction of the scientific precision of pharmaceutical formulas that would be brought about by the use of a multitude of new and untried denaturants.

(3) It would be practically impossible to have only one or even a few denaturants for the thousands of medicinal preparations, and it would become necessary for the retail pharmacist to discontinue manufacturing and depend wholly upon manufacturers, and he would lose his identity as a pharmacist.

(4) Professional pharmacy would cease to attract or retain men of scientific attainments, but would draw to its ranks those actuated

solely by mercenary motives, or the hope of gain from the sale of alcoholic preparations for beverage use.

(5) Physicians have been accustomed to expect and obtain definite, specific results from official and officinal formulas developed as the result of experience and study; and any change in the menstruum for medicinal preparations, or in the processes of manufacture, may so alter their physical appearance and chemical composition as to minimize the professional skill of physicians and prove harmful or disastrous to their patients.

(6) The employment of denatured alcohol in external preparations is not comparable, as their legitimate use is not detrimental to the public health and they can be sold without restriction, but the compounding and dispensing of prescriptions is confined by law to registered pharmacists, thus acknowledging the need of technically trained service in the preparation of medicines for internal use.

In conclusion, we therefore protest, most earnestly, against the issuance of regulations for the use of tax-free alcohol in the manufacture of medicinal preparations for internal administration.

ASSOCIATION MEMBERSHIP.

The National Association of Credit Men is continuously increasing its membership. The purposes of the association differ from others, but every association aims to serve its constituents and add to general service, so to that extent we are interested in the methods employed by the National Association of Credit Men for holding up and increasing its membership. In a foreword on the subject Secretary-Treasurer J. H. Tregoe says:

"We must unitedly strive to bring within the circle of the National Association of Credit Men and its 134 affiliated organizations throughout the country all desirable commercial credit grantors and their membership should not be urged, but invited. We consider it a privilege from our own experience to have had a part in this great work and it will be recognized a privilege by those who understand it as well as we have been permitted to do, and will appreciate what the association has effected and has promoted for the welfare of the country in its credit commerce.

"Expanding the services of the association depends in a very large measure on increased membership, deriving therefrom an increased income, but aside from this factor, to bring within the organization's influences and to produce everywhere the proper spirit of co-operation, membership extension is important and should occupy the constant and energetic attention of the affiliated organizations and the national association.

"One thing is very apparent to us, and it is this, that too often the association is not really sold, that the prospect is not told sufficiently of the organization's aims and accomplishments. Its services therefore are not availed of in the proper way, resignations becoming extremely easy when the first year has passed and there seems to be no apparent reason for continuing the membership. To right this defect, every organization is urged to appoint a Holding Committee as an auxiliary or adjunct to the membership committee and with the purpose of informing new members how the association can be used and to prevent resignations of old members."

A MESSAGE TO MEMBERSHIP WORKERS.

"Some volunteer solicitors may not be enthusiastic over membership work because they do not receive any financial reward.

"While it is true you do not get paid for membership work you do not serve entirely without compensation.

"You are going to get out of this work just as much as you put into it.

"You should look upon serving as a committee worker as an honor. Only men with certain qualifications are invited to undertake this work which is probably the most important in our organization for the members are the association and without members there would be no institution. Your selection indicates that the president thinks you are the right type of man for this work.

"Soliciting new members will give you poise. It will enable you to meet some of the biggest men in the city on an equal footing. You are calling to extend them an invitation, not to beg for their support or to force them to join something that is without value to them. You will very seldom meet with other than a courteous reception. You have every reason to be proud of representing the largest commercial association in the world, with a country-wide membership of 33,000 manufacturers, wholesalers, jobbers and bankers and 134 affiliated organizations."

DRUG MANUFACTURERS' ASSOCIATION MEETS JUNE 5-8.

Instead of being held May 22-25, as originally announced, the eleventh annual meeting

of the American Drug Manufacturers' Association will be held June 5–8. The change in date was made in order to avoid conflict with the dates of the meeting of the American Medical Association which will be held during the week of May 22. The American Drug Manufacturers' Association's meeting will be held at the Biltmore Hotel in New York City as originally announced.

FEDERAL RESEARCH CHANGES DESIGNATED BY SECRETARY WALLACE.

Dr. E. D. Ball, director of Scientific Work of the United States Department of Agriculture, has been appointed by Secretary H. C. Wallace as the representative of the department on the Research Information Service of the National Research Council to take the place of Dr. Carl L. Alsberg, resigned.

Secretary Wallace has also named Dr. Frederick B. Power, in charge of the phytochemical laboratory of the Bureau of Chemistry, as a representative of the bureau in the Division of Federal Relations in place of Dr. Alsberg.

THE NATIONAL HEALTH EXHIBIT IN LOUISVILLE, KY.

The National Health Exhibit, held under the auspices of the Government during the week of February 6, was a success. The druggists of this section, in behalf of Louisville College of Pharmacy, had an attractive and interesting exhibit. The booth which was assigned to them was in one of the most prominent locations in the Armory and was viewed by thousands of the visitors. The exhibit was both educational and historical and was arranged with a view to giving a history of the progress of pharmacy during the past fifty years. The display of crude drugs, with the alkaloids derived therefrom, was really the object of much admiration. Besides there was on exhibit apparatus that had seen many years of service at the hands of those who had made history in pharmacy, such as Dr. Squibb, Professors C. Lewis Diehl and Emil Scheffer. The booth was in charge of experienced pharmacists to advise the uninformed relative to the display. The exhibit made by the pharmacists received the praise of the officials in charge of the exhibit.

SOUTH DAKOTA PHARMACEUTICAL ASSOCIATION STUDENT LOAN FUND.

A campaign started a year ago by the South Dakota Pharmaceutical Association to have South Dakota druggists educated in the state is largely responsible for doubling the enrolment in the state college school of pharmacy this year, according to E. R. Serles, professor of pharmacy.

The South Dakota Pharmaceutical Association recently provided a student loan fund of $600, which is to be used in helping a number of students through the school each year. A committee consisting of D. F. Dexter, Canton; Joseph Wagner, Garden City; and A. A. Woodward, of Aberdeen, is in charge of the loan fund.

MID-WINTER MEETING OF MASSACHUSETTS PHARMACEUTICAL ASSOCIATION.

The mid-winter meeting of the Massachusetts State Pharmaceutical Association was held at the Bancroft Hotel, Worcester, February 6th. The morning session was devoted to the consideration of bills now in the legislature which have to do with the drug business. The bills to be considered this year, eleven all told, are few in number compared with previous years. The new attorney for the state association, Wm. E. Weeks, former mayor of Everett, was present and met the members of the association for the first time. The date for the annual meeting was announced as June 14th and 15th, the convention to be held at the New Ocean House, Swampscott.

The names of C. Fred Wright of Boston and C. W. King of Chicopee as members of the board of pharmacy were presented to be considered at the June meeting.

Mr. Godding writes that the meeting was a success.

IOWA PHARMACEUTICAL ASSOCIATION MEETING.

The forty-third annual convention of the Iowa Pharmaceutical Association was held at the Savery Hotel, Des Moines, January 24 and 25.

The meeting was opened with an address by Dr. F. C. McKean of Des Moines on "Fundamentals of Prosperity" in which he laid particular stress on integrity, faith and industry, after which President George Judisch of Ames delivered his annual address which ably covered questions in which druggists are vitally interested.

The following are some of his suggestions:

"That a Committee be appointed to formulate a code of pharmaceutic ethics;

"That we go on record as supporting the enforcement of the prohibitory law and denounce the sale of any and all alcoholic prepa-

rations in quantities so large or sales so frequent as to justify the suspicion that they may be used for beverage purposes;

"That the pharmacy laws be amended so as to direct the governor to appoint commissioners of pharmacy from a list of capable pharmacists submitted by this association;

"That we appoint a committee of three representative pharmacists to meet a like committee from the Iowa Medical society to discuss the relations of pharmacy and medicine and attempt to bring about a closer coöperation. During my term of office I have found that among pharmacists the crime of omission is greater than that of commission. This is very apparent during a legislative crisis.

"That much of the destructive criticism of our association comes from non-attending members;

"That we do not give sufficient support to our colleges of pharmacy;

"That we can accomplish much if we will work together."

The above suggestions were embodied in resolutions and adopted and also the following which are of direct interest to the American Pharmaceutical Association.

Resolved, that this Association endorses the work done by the National Association of Retail Druggists and the American Pharmaceutical Association and we recommend that all Iowa druggists affiliate with both of these organizations.

Resolved, that this Association approves the plan of affiliation with the American Pharmaceutical Association and the House of Delegates, and that the Iowa Association affiliate with the American Pharmaceutical Association provided a sufficient number of other states take similar action, the final determination of this matter to be left to the Advisory Board and Executive Committee.

Among the speakers were: Samuel C. Henry, N.A.R.D., whose subject was "National Legislation and the Retail Druggists;" Prof. J. Earle Galloway, "Beverage Patent Medicines;" Federal Narcotic Director of the Northwest, Joseph M. Bransky, "Narcotics and the Pharmacists;" Dean W. J. Teeters, "The Development of Pharmacy." Lieutenant Governor John Hammel was one of the speakers at the banquet.

E. L. Newcomb, president of the Northwestern Pharmaceutical Bureau, presented a comprehensive report of the bureau's activity during the past year.

MINNESOTA PHARMACEUTICAL ASSOCIATION.

The following program of the Scientific and Practical Pharmacy Section, and the Northwestern Branch of the American Pharmaceutical Association speaks for interest at the annual meeting of the Minnesota Pharmaceutical Association held in Minneapolis, February 15–17, 1922.

Papers:

1. "The Training of an Apprentice in a Drug Store of To-day Compared with Twenty-Five Years Ago," by John H. Beise.
2. "Practical Bookkeeping and Retail Pharmacy," by O. W. Guilbert.
3. "Toxicology for the Pharmacist," by G. J. De Mars.
4. "Turnovers and Leftovers," by Richard Messing.
5. "Aims and Accomplishments of the National Association of Boards of Pharmacy," by John Culley.
6. "Some Late Information on Old and New Drugs," by Frances Greenwalt.
7. "The College of Pharmacy Survey 1920–21," by F. J. Wulling.
8. "Prescription Psychology," by John Culley.
9. "Your Bit for Pharmacy," by L. J. Aberwald.
10. "Standards of Purity of Some Unofficial Drugs," by E. L. Newcomb, assisted by C. E. Smyithe and George Lark.
11. "Report on Adulteration," by G. Bachman.
12. "What Is Aloes, U. S. P.?" by E. N. Gathercoal.
13. "Methods of Promoting Publicity Work," by W. A. Frost.
14. "College Committee Report," by A. J. Kline.
15. Address by President L. D. Coffman.
16. "The College of Pharmacy, University of Minnesota" (Historical), by F. J. Wulling.
17. "A New Source of Supply of Agaricus," by E. B. Fischer.
18. "Applied Pharmacognosy with Principles of Drug Plant Cultivation," by Anton Hogstad.
19. "The Examination of Alcoholic Medicinals," by E. O. Kagy and J. E. Galloway.
20. "American Conference of Pharmaceutical Faculties," by W. J. Teeters.
21. "National Association of Boards of Pharmacy," by H. C. Christensen.
22. "Vitamines," by E. A. Ruddiman.

23. "Modern Methods of a Wholesaler in Safeguarding His Customers," by H. L. Biersach.

24. "Pure Drug Law," by H. Martin Johnson.

MEETING OF NEW YORK STATE PHARMACEUTICAL ASSOCIATION.

According to Chairman Jacob Diner of the Committee on Time and Place, the 1922 convention of the New York State Pharmaceutical Association will be held during the week of June 19, at Richfield Springs, N. Y.

A DRUGGISTS' DIVISION HAS BEEN ORGANIZED IN THE BIRMINGHAM, ALA., CHAMBER OF COMMERCE.

The druggists of Birmingham, Ala., have organized a division in the Chamber of Commerce of that city; nearly all of the local druggists are members.

SEVENTIETH ANNIVERSARY OF GERMAN APOTHECARIES' (NEW YORK) SOCIETY.

The current issue of the *Apotheker Zeitung* devotes a number of pages to the celebration of the seventieth anniversary of the New York German Apothecaries' Society. Aside from the interesting historical matter in the article there are many excellent half-tones of members who were active in this organization and contributed largely to American pharmacy, among them: Gustav Ramsperger, Gustav Pfingsten, George Kleinau, Henry Imhof, C. F. Schleussner, whose names appear in the Proceedings of the American Pharmaceutical Association. Extended reference is also made in the same publication to the welcome given Mr. George T. Riefflin on his return from Europe, February 11, 1922.

INTERNATIONAL SOCIETY OF QUALIFIED PHARMACISTS, JERUSALEM.

Jacob Michlin, member of the American Pharmaceutical Association, and Secretary of the International Society of the Qualified Pharmacists, Jerusalem, advises that this Society was organized nearly four years ago and has a membership of more than eighty qualified, licensed pharmacists—Christians, Jews and Mohammedans. It is the only international professional society in Jerusalem and is recognized by the Government. With his communication he included a copy of the minutes of the last meeting of the Central Branch, held January 7, at Hotel Amdwisky, Jerusalem; copy of the *Official Gazette*, in which regulations applying to pharmacy in Palestine are pub-

The International Society of the Qualified Pharmacists—Jerusalem Central Branch, and some delegates of other branches. 1. Honorary President, Ch. Goutonopoulous; 2. President, Anton Halaby, Pharm.M.; 3. Secretary, Jacob Michlin, Pharm.M.; 4. Moses Hausdorff, Pharm.M.; 5. Jed Baruch, Pharm.M. 1 re. classe; 6. Akiba Koswiner, Pharm.M.—Members of the Committee. V. P. M. Hurwitz and member F. Haddad were not present when the picture was taken.

lished, and to which some exceptions are taken by the Branch; copy of memorandum addressed to the Government, containing the latter and request for changes; and a photo of some of the members of the Society and delegates from various branches.

ABSTRACTS FROM THE MINUTES.

President A. Halaby presided and in his address thanked Major Wilson and Col. Heron, the Director of Health, for valuable help given, for granting official recognition, and asked that the Government correct apparent defects in the P. H. Ordinance.

A number of the members discussed the ordinance. It was pointed out that the clause had been omitted in Arabic and English copies which defined what was meant by "In exceptional cases a doctor may dispense medicines in his office and, likewise, a veterinarian may do so, for animals." The clause referred to stated that such practice is allowable where there is no pharmacy.

Other sections discussed related to the employment of part-time pharmacists, and dispensing by physicians in smaller hospitals and dispensaries; the selling of certain medicines by unqualified persons, including colchicum, cinchona, lime water, etc.

Complaint was made that pharmacists were not invited to participate in the meeting of the Advisory Council when pharmaceutical matters were considered, and the seeming nonenforcement of the law and regulations applying to pharmacy.

Pharmacy in Great Britain was discussed; it was stated that there physicians were taught pharmacy, and the course in pharmacy for chemists extended over a period of two years, while those of Palestine had the same preliminary education as medical students and were required to complete a 3-year course in pharmacy.

It was decided to take these matters up with the Director of Health.

A committee was elected as follows: Ch. Goutonopoulous, the oldest pharmacist in Jerusalem, honorary president, and Messrs. Anton Halaby, Jacob Michlin, Mendl Hurwitz, Moses Hausdorff, Farid Haddad, Akiba Koswiner and Jed Baruch, members.

THE AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY.

At the annual meeting of the American Druggists' Fire Insurance Company, held in Cincinnati, February 13–15, Walter Rothwell of Philadelphia, Pa., was elected treasurer of the company, to fill the vacancy caused by the death of Prof. George B. Kauffman; George O. Young of Buckhannon, W. Va., was elected to the executive board of the company; and E. H. Thiesing of Cincinnati, Ohio, to the directorate. Other officers are: Chas. H. Avery of Chicago, Ill., president; L. G. Heinritz, Holyoke, Mass., vice-president, John H. Linnemann, Cincinnati, O., assistant treasurer and Frank H. Freericks, Cincinnati, O., secretary and general counsel. The executive board consists of Chas. H. Avery, James H. Beal, L. G. Heinritz, Walter Rothwell, A. O. Zwick, Geo. O. Young and Frank H. Freericks. The directors are: Chas. H. Avery, Wm. C. Anderson, James H. Beal, L. G. Heinritz, E. B. Heimstreet, Lewis C. Hopp, Simon N. Jones, M. S. Kahn, John D. Muir, Walter Rothwell, Edw. W. Stucky, E. H. Thiesing, George O. Young, A. O. Zwick and Frank H. Freericks.

Appropriate action was taken by the board and the stockholders on account of the death of Prof. Geo. B. Kauffman, who had been the treasurer of the company for the past fifteen years.

THE UNIVERSITY OF MICHIGAN LOANS MONEY TO ITS NEEDY AND WORTHY STUDENTS.

For more than a quarter of a century the University of Michigan has been lending money to needy students, and never has lost a cent through wilful failure of the borrower to repay. All loans are subject to approval by the dean of the college in which the student is enrolled, and by the president of the university. The maximum amount a student may get at one time is $100, and in general, payment is expected to be made within a year after graduation, with interest at five per cent.

LOUISVILLE COLLEGE OF PHARMACY HAS NEW CHEMICAL LABORATORY.

The Louisville College of Pharmacy opened its new chemical laboratory last month. The laboratory has accommodations for 100 students and is fitted up with modern appliances and fixtures.

TEMPLE UNIVERSITY ALUMNI EDUCATIONAL MEETINGS.

The January Educational Meeting of the Pharmacy Alumni Association, Temple University, was addressed by Dr. Alexander Sterling on "Anaphylaxis." A musical program added to the evening's entertainment. Dr. Paul Pittenger was the speaker at the February meeting.

FOUNDERS' DAY EXERCISES AT PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

The 101st anniversary of Philadelphia College of Pharmacy and Science was held February 23rd. Honorary memberships were awarded to the following:

Dr. E. Poulsson, Christiania, Norway, Professor of Pharmacology and Chairman of the Pharmacopoeial Commission of Norway; Dr. L. Van Itallie, University of Leyden, Holland, Chairman of Committee of Revision of the Dutch Pharmacopoeia; Sir Nestor Tirard, London, England, Secretary of the Pharmacopoeial Committee of the General Medical Council of Great Britain; Dr. J. Bougault, Professor of Galenical Pharmacy, L'Ecole Superieure de Pharmacie, Paris, France; Sir William Glyn Jones, M. P., London, England, Secretary of the Pharmaceutical Society of Great Britain.

Judson Daland, M.D., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, spoke on "Professional Ethics." The subject of Prof. Theodore J. Bradley, Dean of the Massachusetts College of Pharmacy, was "Financing a College of Pharmacy," and Prof. Julius W. Sturmer spoke on "The Trend of Education in Pharmacy and in the Allied Professions."

PHI DELTA CHI CONVENTION.

ANNUAL MEETING OF PHARMACEUTICAL-CHEMICAL FRATERNITY HELD IN KANSAS CITY.

The twenty-second Grand Council meeting of the Phi Delta Chi Fraternity (pharmaceutical-chemical) held in Kansas City at the Hotel Baltimore February 17th and 18th, was one of the most largely attended and successful conventions in the history of the fraternity.

Early Thursday evening, February 16th, the delegates and visitors began arriving at the hotel and the meeting was regularly called to order promptly at 8:00 Friday morning.

The delegates and visitors were particularly interested in hearing reports from the two chapters installed since the 1921 meeting held in Indianapolis. These were Chi Chapter installed at Alabama Polytechnic Institute College of Pharmacy on April 9, 1921, and Psi Chapter installed at Des Moines University on December 10th.

Owing to the large amount of work to be done by the convention, no social activities were indulged in other than the usual banquet and round table discussion which was held on Friday evening, February 17th, in the hotel, and which was largely attended.

Several parties of visitors from chapters at nearby colleges accompanied their delegates to the convention, some of the more prominent of these visitors being Prof. L. E. Sayre, University of Kansas, T. A. Linck, prominent druggist of Kansas City, W. E. Howe, prominent in drug circles, Pueblo, Colorado. Almost the entire chapter at the University of Kansas, Lawrence, Kansas, visited the Council.

Officers elected to serve for the coming year are:

Grand President, Emory W. Thurston, Indianapolis.

Grand Past President, Azor Thurston, Grand Rapids, Ohio.

Grand Vice-President, Adley B. Nichols, Philadelphia.

Grand Secretary and Editor "The Communicator," L. C. Heustis, Indianapolis.

Grand Treasurer, C. Verne Nichols, Anadarko, Okla.

Temporary officers appointed to serve during the convention were:

Grand Asst. Secretary, J. E. Galloway, Des Moines, Ia.

Grand Master at Arms, R. P. Courtney, Chicago, Ill.

Grand Chaplain, Ulysses Lewis, Auburn, Ala.

Grand Inner Guard, J. P. Brown, Lincoln, Neb.

Committees appointed were as follows: Credential, on Officers' Reports, on Chapter Reports, Auditing, Budget, Nominating, Time and Place of Next Meeting, Expansion, Business Policy, Scholarship, and Alumni Organization.

One of the most important actions of the Council was the granting of a chapter to the Pharmacy Club of the University of Tennessee, Memphis. This new chapter will be installed as Omega Chapter sometime early in April.

Plans were completed for the issuance during the year of the second History and Directory of the fraternity. The officers are very anxious to get in touch with all alumni who are not in communication with the fraternity. Such alumni are urged to write Mr. L. C. Heustis, 5005 Park Avenue, Indianapolis, Indiana.

The Phi Delta Chi Fraternity, originally the Phi Chi Fraternity, was founded November 2, 1883, at Ann Arbor, Michigan, and is to-day the leading pharmaceutical-chemical fraternity. It aims at the maintenance of a high order of scholarship.

The 1923 Grand Council will be held in Detroit.

During the session, the fraternity went on record as being in favor of a minimum four-year course in all pharmacy colleges; a general effort to raise to a high standard the profession of pharmacy; also as wishing to extend every possible assistance to the officers and authorities in the full enforcement of the Volstead Act.

THE PHARMACIST AND THE LAW.

TAXATION SHOULD BE MADE LESS BURDENSOME.

"Taxation never was popular and never will be," writes Richard Spillane in his column, "Men and Business," in the *Philadelphia Ledger* of February 20. Some of the paragraphs are reprinted as follows:

"No matter how scrupulous you may be, you are not safe. If the Government challenges your return, it does not admit possibility of error on its part, but puts upon you the burden of proving your innocence. Under the law you have to pay the tax in full before you can bring suit to get any of it back. Then if the Court decides in your favor, the Government may offer to compromise or it may appeal. The Government rarely pays any attention to adverse decisions in lower courts, disregarding everything of that sort until the case finally gets to the Supreme Court of the United States. That means years of delay. Also, it means great expense for lawyers and for other things, not the least, in time, worry and the loss of use of your money. Then, if you finally win, the question is to collect. There are unpaid claims against the Government dating back to the Civil War and lots of them dating back to the Spanish-American War.

"The Government assumes that all taxpayers are dishonest. In many cases it is able to prove its contention. In many more it is not, but the burden of proof is on the taxpayer and, if the Government is in error, the taxpayer still must pay the lawyers' bill.

"Here is an example in the case of a small corporation: The Government sent two agents to examine the books. They claimed $105,000 additional tax was due. When they departed, the president of the corporation had to engage experts and lawyers to disprove their charge. They did, but they had to wade through a mountain of papers. After that there was voluminous correspondence. The Government confessed it was in error, but it cost the corporation $35,000 to prove it didn't owe the $105,000. There are thousands of cases like this each year. The cost should be on the Government when it makes the error, but the cost is put on the taxpayer."

More reason and justice should enter into tax collection methods.

CONFERENCE ON NARCOTIC LEGISLATION.

A conference of representatives of the professions and trades concerned in the manufacture, distribution and use of habit-forming narcotic drugs met in New York City, March 2. The call was issued in accordance with instructions of the Council on Health and Public Instruction, approved by the House of Delegates of the American Medical Association.

The primary function of the conference is the consideration of principles which should be included in a model state law for the regulation of the manufacture and sale of habit-forming narcotic drugs.

A SALES TAX OR A TURN-OVER TAX.

The objection to the Sales Tax is, that in some lines of business the tax will not be passed on to the consumer, and the business so situated will carry the burden of taxation and not the consumer. A turn-over tax can be provided that will obligate everyone to pay his own share of the tax. Self-interest enters largely into the question of taxation. If the bonus is to be a worthy expression of the sentiment and appreciation of the people, its cost should be borne by everybody, and the tax should be as nearly universal as any system of assessment can provide.

CONFERENCE ON SPECIALLY DENATURED ALCOHOL FOR INTERNAL MEDICATION.

A conference was called by Secretary W. J. Woodruff, of the American Drug Manufacturers' Association, to meet in Washington, February 28. At this writing (February 28) we are not informed relative to the results of the conference, but the purpose of the call advised that it was for taking strong and concerted action against the issuance of regulations by the Revenue Department providing for specially denatured alcohol to be used for making medicinal preparations for internal administration. Representatives of the pharmaceutical industries and of the medical profession attended the meeting; there is no doubt

that the action taken by the conference will be in opposition to the proposed regulations.

HORSE HAIR SHAVING BRUSHES PROHIBITED IN NEW REGULATIONS AFFECTING HORSE HAIR IN NEW YORK.

At a meeting of the Board of Health of the Department of Health of the City of New York, held in the said city on the 26th day of January, 1922, the following resolution was adopted:

Resolved, That the resolution adopted by the Board of Health June 16, 1920, approving certain processes for the sterilization of hair to be used in the manufacture of brushes or cloth and relating to the provisions of Section 230 of the Sanitary Code, be and the same is hereby amended to read as follows:

WHEREAS, this Board has adopted Section 230 of the Sanitary Code relating to the manufacture and sale of hair brushes and hair cloth and the protection of the public against anthrax; and

WHEREAS, the provisions of said section require all hair used in the manufacture of brushes and cloth to be sterilized by a process prescribed or approved by this Board; and

WHEREAS, an investigation conducted by the Department of Health indicates that in so far as can be ascertained at this time only two processes have been found to be effective and adequate to properly sterilize such hair and to render the same free from anthrax bacteria and spores; and

WHEREAS, the two processes referred to are as follows, to wit:

1. Boiling the hair in water maintained at a temperature of 212 deg. F. for a period of at least three (3) hours.
2. The placing of the hair in an autoclave in which a ten-inch vacuum is produced. Live steam to be then turned on and kept at fifteen (15) pounds' pressure for a period of three (3) hours; be it therefore

Resolved, that the following processes for the sterilization of hair to be used in the manufacture of brushes or cloth and relating to the provisions of Section 230 of the Sanitary Code, be and the same are hereby approved, to wit:

1. Boiling the hair in water maintained at a temperature of 212 deg. F. for a period of at least three (3) hours.
2. The placing of the hair in an autoclave in which a ten-inch vacuum is produced. Live steam to be then turned on and kept at fifteen (15) pounds' pressure for a period of three (3) hours.

Resolved, That no person shall manufacture, have, keep, offer for sale, sell, distribute or give away in the City of New York any shaving brush in which horse hair is used in whole or in part.

BOOK NOTICES & REVIEWS.

Naval Stores, History, Production, Distribution and Consumption. Compiled by Thomas Gamble, Editor *Weekly Naval Stores Review*, Savannah, Ga. 286 pp. $3.25. Together with one year's subscription to the *Review* for $5.25.

Naval stores or materials used in ship construction derived from pine trees, such as rosin, tar, turpentine, pitch, etc., comprise one of the most important industries the world over, and especially in the United States. Great credit is due to the author, who is well versed in this subject, being editor of a trade journal, for the compilation of this work. He himself contributed many articles of historical value, as Early History of the Naval Stores Industry in North America, in Wilmington, in Charleston, in Savannah, etc. The entire subject is treated very thoroughly, from the first monograph—Pine Trees of the South and Their Products, by Michaux—to the last compilation: Statistics of the New York Pitch and Tar Market for 15 Years. Every corner of the earth producing naval stores is represented, Finland, Norway, Russia, Prussia, Germany, France, Portugal, Greece, British India, Japan, China, Philippine Islands, Mexico, and others. All phases of the naval stores industry, such as methods of production, wood distillation and its products, standards, marketing, uses, prices, exports and other statistics, receive due consideration. I must not forget to mention the chapters on Camphor from Oil of Turpentine, and Pine Needle Oils which should be of special interest to the pharmacist and pharmaceutical chemist.

The book is well illustrated, some of the illustrations occupying full pages. They comprise all phases of the industry in America as well as abroad. A three-column index of subjects and authors filling five pages is another proof of how well the entire subject is treated. We can cheerfully recommend the book to all interested.

OTTO RAUBENHEIMER, PH.M.

Fünfzig Jahre Chemische Fabrik auf Aktien, vormals E. Schering 1871–1921. (50th Anniversary of the Schering Chemical Corporation.)

From little acorns big oak trees grow! Such has been the case in a number of pharmaceutical and chemical firms in Germany. From the Engel-Apotheke in Darmstadt, which Friedrich Jacob Merck bought in 1654, developed the world firm of E. Merck. The apotheke which was established in 1770 for the French colony in Berlin was the starting point of the firm of J. D. Riedel. Last, but not least, the "Grüne Apotheke," in 21 Chausseestrasse, Berlin, which Ernst Schering bought in 1851, was the beginning of the Schering Chemical Corporation.

Ernst Schering was a scientific pharmacist who as early as 1854 recognized the fact that C. P. chemicals are of the greatest importance in photography. His chemicals, and especially his potassium iodide, became world renowned. The business grew to such an extent that on October 23, 1871, together with his friend Hofapotheker Julius Friedrich Holtz, who for ten years managed the Royal Court Pharmacy in Charlottenburg, he established the "Chemische Fabrik auf Aktien." These two pharmacists, Schering the scientific worker and Holtz the business man, were a happy combination which was responsible for the great success of the firm. After 50 years of hard work the firm employs to-day 193 bookkeepers and correspondents, 52 chemists and engineers, 59 foremen, 27 assistants and over 1000 workmen. The firm has branches all over the world and Schering and Glatz, in Maiden Lane, New York City, takes care of the United States.

Besides the many technical products of Schering, the following pharmaceutical chemicals are well known: Chloral, chloramide, paraldehyde, piperazine, phenocoll, alpha- and beta-eucaine, the glycerophosphates or tonols, trikresol, formalin, medinal, urotropin and atophan. It is a credit to the firm that it permitted the U. S. P. Revision Committee to include the last chemical in the U. S. P. IX, before its patent had expired, which was done under the title *Acidum Phenylcinchoninicum*.

On the occasion of the Golden Jubilee of the firm a Festschrift was published, a real work of art, containing lithographs of the founder and his "Grüne Apotheke," besides the chemical works of to-day. Bound in green linen, the Festschrift suggests the hope that the firm of Schering will continue to grow and prosper.

OTTO RAUBENHEIMER, PH.M.

PUBLICATIONS RECEIVED.

Proceedings of the 18th Annual Convention of the National Association of Boards of Pharmacy, held at New Orleans, La., September 5–6, 1921. The report contains the constitution and by-laws of the Association, list of past and present officers, etc. The frontispiece is an excellent half-tone of Charles Gietner, President 1920-21.

Proceedings of the 42nd annual meeting of the North Carolina Pharmaceutical Association, held at Charlotte, N. C., June 21–23, 1921, containing also the roll of members, report of the secretary-treasurer of North Carolina Board of Pharmacy, list of registered pharmacists, and of the members of the Traveling Men's Auxiliary.

NEW PUBLICATIONS.

Organic Compounds of Mercury. By Frank C. Whitmore. (American Chemical Society Monograph Series.) xii + 397 pp. The Chemical Catalog Co., Inc., New York, 1921. Price, $4.50.

Animal Proteins. By Hugh Garner Bennett. xiv + 288 pp. D. Van Nostrand Co., New York, 1921. Price, $3.75.

Soaps and Proteins—Their Colloid Chemistry in Theory and Practice. By Martin H. Fischer, with the collaboration of George D. McLaughlin and Marion O. Hooker. ix + 272 pp. John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London, 1921. Price, $4.00, net.

Alchemy: Its Science and Romance. By J. E. Mercer. 245 pp. Illustrated. Price, $3.50. The Macmillan Co., New York.

Alkaloids: Some Microchemical Tests for Alkaloids. Charles H. Stephenson and C. E. Parker. 110 pp. Price, $4.00. J. B. Lippincott Co., Philadelphia.

Bacteriology for Students in General and Household Science. By Estelle D. Buchanan and Robert Earle Buchanan. Revised Edition. 560 pp. Price, $2.60. The Macmillan Co., New York.

Biological Chemistry: Practical Biological Chemistry. By Gabriel Bertrand and Pierre Thomas. 348 pp. Illustrated. Price, $3.75. Harcourt, Brace & Co., Inc., New York.

Biophysics: An Introduction to Biophysics. By David Burns. 435 pp. Illustrated. Price, $5.50. The Macmillan Co., New York.

Colloids: Physics and Chemistry of Colloids and Their Bearing on Industrial Questions. Report of a General Discussion held jointly by the Faraday Society and the Physical

Society of London, October 25, 1920. 190 pp. Price, 2s. 6d. H. M. Stationery Office, London.

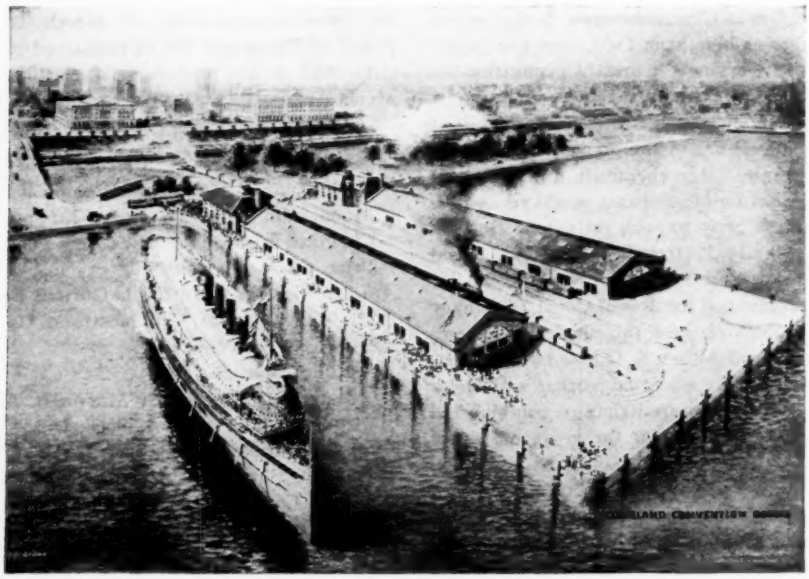
Colloids: Kolloidchemie und Photographie. By Lüppo-Cramer. 2d Ed., revised. 112 pp. Price, 7s. 10d. net. Th. Steinkopff, Dresden, Germany.

Food: Vital Factors on Foods; Vitamins and Nutrition. By Carleton Ellis and Anna L. MacLeod. 500 pp. Illustrated. Price, $5.00. D. Van Nostrand Co., New York.

Organic Chemistry: Theories of Organic Chemistry. By Ferdinand Henrich. Translated and enlarged from therevised German edition of 1918 by Treat B. Johnson and Dorothy A. Hahn. John Wiley & Sons, Inc., New York.

Organische Chemie. By R. Pummerer. Vol. III. Wissenschaftliche Forschungsberichte, Naturwissenschaftliche Reihe. 182 pp. Price, 10s. 9d. Th. Steinkopff, Dresden.

Physical Chemistry: Die Physikalische Chemie in der Inneren Medizin. By H. Schade. 569 pp. Price, 21s. net. Th. Steinkopff, Dresden, Germany.



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